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Re-Scheduling of Articles

Reference to the Coming Articles box on Page 595 of this issue will disclose re-announcement for February of papers by Messrs. Richard J. Halloran, Kenneth A. Boos, and Harold H. White originally scheduled for the present month. The article by James A. McBride, also announced for January, will appear in March. These articles have been postponed to permit publication in January of several papers bearing on economic controls for defense purposes, felt to require early scheduling for maximum usefulness.

This *Bulletin* is published monthly by the National Association of Cost Accountants, 505 Park Ave., New York 22, N. Y. Subscription price, $10 per year. Reentered as second-class matter September 22, 1949, at the Post Office, New York, N. Y., under the Act of March 3, 1879.

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N.A.C.A. BULLETIN

VOL. XXXIII NO. 5 JANUARY 1952

Ceiling Prices Under the Capehart Amendment

by JAMES R. EVANS, Chief Auditor, and I. WAYNE KELLER, Assistant Controller,
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Based on issuance of the recent Supplementary Regulation 17 to General Ceiling Price Regulation 22 for manufacturers, this article "places" the new provision in the industrial price control picture and goes on to illustrate calculation of prices under GCPR 22 as so amended. Attention is called to the necessary care to be taken in making interpretation in a field governed by administrative regulations, especially new ones.

With the release on November 9, 1951 of Supplementary Regulation 17 (SR-17) to Ceiling Price Regulation 22 (CPR-22) and of Supplementary Regulation 1 to Ceiling Price Regulation 30, the Office of Price Stabilization opened the way for many manufacturers to apply for adjustment of their ceiling prices under the much publicized Capehart Amendment. The press release announcing these supplements stated that these two supplements were the first of a series of regulations which will be issued to carry out the provisions of amended Defense Production Act of 1950. At the time of this writing, the others of the series have not been issued. However, since the provisions of the Capehart Amendment apply to all ceiling price regulations, the same general procedures will probably be followed in these other supplements. For this reason, it is believed that a working knowledge of SR-17 will provide a general background for calculating new ceiling prices under similar supplements to any of the regulations. Also, about twenty-five per cent of industry is covered directly by the new regulations issued. Therefore, the scope of this paper may be serviceably limited to SR-17 of CPR-22.

The first point to note is that, coincident with the issuance of SR-17, Amendment 33 to CPR-22 was also issued. This amendment makes it mandatory for most manufacturers covered by CPR-22 to come under the provisions of the

regulation as of December 19, 1951. Exceptions are (1) for commodities on the Supplementary Regulation 12 list, for which tailored industry regulations are to be issued, and (2) new tires and tubes covered by SR-10. Making CPR-22 mandatory means that manufacturers must roll back prices if the CPR-22 levels are lower than their present prices. However, this roll back will not be required if ceiling prices calculated under SR-17 are as high or higher than current prices, provided all of the requirements of SR-17 are met.

If a manufacturer is now pricing under CPR-22, he need not file under SR-17 at this time and may elect to file at any future date. Applications for price adjustment under SR-17 must be filed on Public Form No. 100. Having complied with the provisions of CPR-22 and mailed Public Form No. 100 to the Office of Price Stabilization by registered mail, prices may be adjusted as soon as the manufacturer receives the postal return receipt indicating that his application has been received. All CPR-22 ceiling prices must be adjusted simultaneously except those covered by Sections 33 or 34 of the regulation.

Principal Changes Introduced by Supplementary Regulation 17

There are five major changes made effective by SR-17:

1. The quarters which can be used as a base period for finding pre-Korean prices.
2. The dates from which cost increases may be figured.
3. The cut-off dates for cost increases in labor and material.
4. The inclusion of special provisions governing changes in amounts paid for overtime work or shift premiums.
5. The inclusion of all cost increases, including increases in overhead costs, with certain stated exceptions.

The first three of these are simply changes in dates and, if the manufacturer has already filed under CPR-22, he has the basic data and methods for recomputing labor and material cost increases if he wishes to avail himself of the provisions of SR-17. The overtime and shift premium adjustment is also based on the same type of computation used under CPR-22. With Item 5, the inclusion of overhead, it is a different story. Here, additional and completely new calculations are required. The agency has recognized the wide variations in the cost accounting practices for overhead and has endeavored to make the regulations sufficiently broad, yet none the less specific, as they apply to increases in this element of cost. It is the overhead computation which will present the greatest difficulty in determining ceilings under SR-17.

Altered Basis for Computation of Overhead Factor

The regulations provide for the determination of changes in *unit overhead* between the first six months of 1950 and the first six months of 1951. Provi-

sion is made for some deviation from these calendar periods for manufacturers who do not keep overhead records on a calendar month basis. Overhead adjustments may be computed for the entire business, a unit of the business for which separate accounting records are kept, or an individual product, product line or category. If certain overhead costs are not allocated to products or other units of the business under the regular cost accounting procedure, an allocation may be made for calculating price adjustments under SR-17. However, it is not necessary to do this and the per cent of increase in specific or allocated overhead may be combined with the per cent of increase in unallocated overhead to arrive at the total overhead factor to be used for requesting price adjustment. In making allocations, factory overhead is to be allocated on the value of production and general overhead (distribution and administrative) on the value of net sales.

In calculating the overhead adjustment, it is essential that (1) the same element of overhead is not included twice and (2) that unallowable costs are not included. The possibility of including an element of overhead twice lies not so much in the combining of allocated and unallocated items as in the inclusion of costs which were included in the labor and material adjustment calculation. Labor and material costs as defined in CPR-22 are not limited to direct costs as usually defined in cost accounting practice but included expense materials, certain services, and indirect factory labor. Under SR-17, this same classification may be maintained but, if it is, then expense materials, indirect labor, etc., are not considered in calculating the overhead adjustment. However, it would be permissible under SR-17 to use only direct material and direct labor in computing the material and labor cost adjustments and to include expense materials, indirect labor, and services in the calculation of the overhead adjustment. This would, of course, require a complete change in the labor and material cost elements used in computing price adjustments under CRP-22 filed on Public Form No. 8. The unallowable overhead costs are stated specifically in the regulations and need not be repeated here.

Thus far, only the major changes made effective by SR-17 have been mentioned, and these very generally. In order to illustrate the effect of SR-17 and the procedures for calculating price adjustments under it, an actual case study will be presented. All figures are hypothetical and products fictitious, but the procedures are those which actually have been or will be followed. As background, the study will begin with the preparation of the original filing under CPR-22 and then continue through to the preparation of Public Form No. 100 under SR-17.

EXHIBIT 1

OPS PUBLIC FORM NO. 6

UNITED STATES GOVERNMENT
OFFICE OF PRICE STABILIZATION
WASHINGTON 25, D.C.

FORM APPROVED
BUDGET BUREAU NO. 84.R119

MANUFACTURER'S PRICE ADJUSTMENT REPORT
PURSUANT TO CEILING PRICE REGULATION 22

See the reverse side of this form for instructions.

The individual company information reported on this form is for use in connection with The Defense Mobilization Program. Persons who have access to individual company information are subject to penalties for unauthorized disclosure.

NAME OF FIRM	ADDRESS (Street and No.)	(City, Zone)	(State)	(Code for Item 1)
Armstrong Cork Company		Lancaster,	Pennsylvania	73-2274

1 - DESCRIBE THE CATEGORY OR PRODUCT LINE COVERED BY THIS REPORT	2 - GIVE THE DATES OF THE BASE PERIOD USED	3 - ESTIMATED 1950 DOLLAR SALES	4 - LABOR COST ADJUSTMENT FACTOR
Armolite Floor Covering	FROM April 1 TO June 30, 1950	12,000,000	1.9%

5 - MATERIALS COST ADJUSTMENT FACTOR
(Complete this part if Method 1, 3, or 4 is used)
METHOD 1 ☐ METHOD 3 ☒ METHOD 4 ☐ ADJUSTMENT FACTOR 14.2%

(Complete this part if Method 2 is used)

ADJUSTMENT COMPUTED FOR SELECTED COMMODITY	BASE PERIOD SELLING PRICE FOR THIS COMMODITY	NAME OF COMMODITY
$	$	

6 - PRICE ADJUSTMENT RATIO _____ *(For use only under Supplementary Regulation 2 to CPR 22)*

7 - CERTIFICATION REGARDING PROPOSED CEILING PRICE INCREASES OVER GENERAL CEILING PRICE REGULATION

I certify that no ceiling price calculated under the regulation for commodities covered by 1 above exceeds the GCPR ceiling price, except as listed in 8 below and I understand that an increase proposed below shall be effective 15 days after filing this report unless I am notified by OPS that the price has been disapproved or that more information is required.

NOTICE: A willful false return is a criminal offense.

SIGNATURE OF OFFICER OR AUTHORIZED AGENT OF FIRM	TITLE	DATE

8 - PROPOSED CEILING PRICE INCREASES

NAME AND SPECIFICATION OF ITEM *(Include physical unit priced)* (a)	CLASS OF CUSTOMER AND TERMS OF SALE (b)	ESTIMATED 1950 DOLLAR SALES (c)	BASE PERIOD PRICE (d)	GCPR PRICE (e)	PROPOSED PRICE (f)	PROPOSED PRICE AS A % OF GCPR PRICE Col. (f)÷(e) (g)	MATERIALS COST ADJUSTMENT (METHOD 2 ONLY) (h)	*(For OPS Use Only)*
8/4 Armolite - Square Yard	Wholesaler 5% - 15 days Net - 60 days	$4,000,000	$.400	$.400	$.464	116.00%		

(All products and figures hypothetical)

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Previous Applications for Ceiling Price Under Regulation 22

Manufacturers' Price Adjustment report forms, otherwise known as Public Form No. 8 (Exhibit 1) were filed with the Office of Price Stabilization on May 15, 1951, pursuant to CPR-22. An election was made to file by product line. The illustrations and examples used in this paper are confined to one of these lines, although the principles were used generally for all other lines.

The preparations necessary to file these reports and the elections of alternative methods allowable under the regulations were determined first after a thorough review of the regulations. Basically, the objective was to determine the extent of material and labor cost increases between a selected "base period" and December 31, 1950 and/or March 15, 1951 depending upon which was applicable, and to adjust prices to reflect the increase in cost. The "base period" could have been the period April 1 through June 24, 1950 or any previous calendar quarter ended not earlier than September 30, 1949. The election was to use the April through June quarter.

There were four alternative methods available for calculating "the material cost adjustment":

Method 1—Allowed for measuring cost increases upon the basis of a unit of the business not larger than a plant.

Method 2—Was for an individual commodity and based upon the increase in unit manufacturing materials costs for that commodity.

Method 3—Was for a product line and based upon the increase in unit manufacturing materials costs for the best selling commodity in the product line. This provided for a percentage figure to be derived and applied to the base period price of each commodity in the product line.

Method 4—Was also for a product line, as well as for a category. It was based upon the increase in the cost of the bill of materials used in producing the goods sold during an accounting period of three months or less.

Method 3 was selected as best suited to the nature of the business and the records maintained.

Determination of Costs Under Ceiling Price Regulation 22

Established cost accounting practice provided the components of the actual factory costs of goods sold, i.e., direct material, direct labor, and manufacturing expense, for each product line. This procedure included the allocation of all factory expense to product lines. Therefore, these accounting records and reports provided the basic data for calculating the price adjustments. These are exemplified in Column 1 of Exhibit 2.

The first step was to break down the total material costs into the major basic raw materials and to separate the expense material and expense labor from the

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ARMSTRONG CORK COMPANY
Sales and Actual Cost of Sales
For the Period of
April, May and June, 1950

	Armolite Floor Covering				
	Base Period Actuals			Out-Off Date Costs	
	Amount	Ratio of Cost to Sales	Per Cent of Cost Increase	Amount	Ratio of Cost to Sales
Column	(1)	(2)	(3)	(4)	(5)
Units Sold	10,000M sq.yds.	%		10,000M sq.yds.	%
Sales Dollars	$3,000,000			$3,000,000	
Actual Factory Cost of Sales					
Direct Material					
Linseed Oil	210,000	7.0	35.0	283,500	9.5
Rags and Paper	300,000	10.0	25.0	375,000	12.5
Resins	300,000	10.0	25.0	375,000	12.5
Packing	120,000	4.0	20.0	144,000	4.8
Other Material (1)	510,000	17.0	34.1	684,000	22.8
Total Raw Material (a)	1,440,000	48.0		1,861,500	62.1
Direct Labor (b)	330,000	11.0	10.0	363,000	12.1
Manufacturing Expense					
Factory Salaries (b)	75,000	2.5	10.0	82,500	2.8
Indirect Labor (b)	75,000	2.5	10.0	82,500	2.7
Maintenance Labor (b)	30,000	1.0	10.0	33,000	1.1
Maintenance Material (a)	30,000	1.0	15.0	34,500	1.1
Premium Pay & Exp. Benefits (b)	60,000	2.0	10.0	66,000	2.2
Fuel	30,000	1.0	-	30,000	1.0
Purchased Power	60,000	2.0	-	60,000	2.0
Taxes, Insur. and Depr.	90,000	3.0	-	90,000	3.0
Other Manufacturing Exp.	30,000	1.0	-	30,000	1.0
Total Manufacturing Exp.	480,000	16.0		508,500	16.9
Total Factory Cost of Sales	2,250,000	75.0		2,733,000	91.1
(a) Total Material Cost as % of Sales -		49.0			63.2
(b) Total Labor Cost as % of Sales -		19.0			20.9
Sales Price Adjustment % for Material Cost Increase =		14.2			
" " " % for Labor Cost Increase =		1.9			

(1) Actually, there were more specific raw materials detailed, but some of this detail has been omitted in this exhibit for simplification.

(All products and figures hypothetical)

EXHIBIT 2

total factory expense for each commodity. The standard cost records provided the information as to the quantity of each major raw material required per unit of finished product. Adjustments were made for quantity variations experienced during the period, as indicated by the cost records. These quantities were valued at the average prices paid during the base period. The sum of these values was equal to the total material values as determined in the calculations mentioned in the second paragraph above.

The segregation of the material and labor components of expense was accomplished by using the basic data for actual expense, which was available in the

manufacturing expense budget records. These furnished the detail as to the ratio of the elements of expense, such as indirect and maintenance labor, maintenance materials, overtime and premium pay, fuel, etc. Exhibit 2 shows the breakdown into captions. These ratios were applicable to all manufacturing expense for an entire plant.

The detail of the actual factory costs of the sales for the base period were now complete, again as shown in Column 1 of Exhibit 2. Having obtained sufficient detail of the base period costs from which the cost adjustment factors could be calculated, the next step was to determine the extent of the increase in the costs between the base period and the "cut-off date" (either December 31, 1950 or March 15, 1951). These percentages are displayed in Column 3 of Exhibit 2.

The percentage of increase in material costs was determined for most materials by comparing the average price paid for the specific material in (1) the base period and (2) the 30-day period prior to the cut-off date. In both cases, the purchases were of normal quantities from regular suppliers. Certain other major raw materials were regularly covered by written contracts with the suppliers and in such instances, the last contract prices prior to (but within 60 days before) March 15, 1951, were compared with the base period price.

For the percentage of increase in labor costs between the end of the base period (June 24, 1950) and the cut-off date (in this case, March 15, 1951) the weighted average rates paid at each plant on these dates were compared and the percentage of change applied to both direct and expense labor. The increase in factory salaries was determined readily from the salary records by the same procedure.

The base period costs in Column 1 of Exhibit 2 were then adjusted by the percentage of increase shown in Column 3 and the adjusted costs shown in Column 4. Fuel, purchased power, taxes, insurance, and depreciation and other manufacturing expenses were not included for price ceiling determination under CPR-22 although the regulations would have permitted the inclusion of fuel and purchased power, had the rates for these changed between the base period and the cut-off date.

The base period costs and the cut-off date costs were then related to the sales dollars and the ratio of cost to sales determined as shown in Columns 2 and 5. These were summarized as to material (items marked "a") and labor (items marked "b"). The difference, 14.2 per cent for material and 1.9 per cent for labor represented the cost adjustment factors by which sales prices could be increased in order to reflect the increase in costs. These are the figures carried

to Items 4 and 5 on Exhibit 1. Item 8 on Exhibit 1 shows in Column (f) the net result of applying the above two factors to the base period sales prices for a specific product in the commodity group and was the requested price ceiling.

Application for Ceiling Price Under Supplementary Regulation 17

Public Form No. 100 required to be filed under SR-17 was released too late to be included as an exhibit with this paper. However, a review of the form and the instructions for completing it indicates that the methods described in this paper will furnish the necessary basic information. Form No. 100 does require some additional information beyond that filed with Form No. 8 under CPR-22. The majority of this additional information is statistical in nature, such as net sales, value of production, general overhead, payroll, etc. The following sections of this paper, therefore, proceed to the calculations necessary to conform with SR-17.

Material and Labor Costs Under Supplementary Regulation 17

The election had been made under CPR-22 to use the base period of April through June, 1950 for establishing pre-Korean prices. Therefore, no change in the base period is required since this conforms with Section 4 (b) of SR-17. However, had the election been made to use a quarter in 1949, then under SR-17, new base period prices would have had to be determined.

The method used under CPR-22 for computing the materials cost adjustment followed Section 15 (Method 3) of those regulations. SR-17, Section 5, (8) specifies that a substitute method must be used. This substitute method is described in Section 7 of SR-17. The significant change in the method described in this section as compared with Method 3 of CPR-22 lies in the selection of commodities to be included for calculation of the material cost adjustment and the establishment of base period prices. It is quite obvious that the new method was devised to prevent a manufacturer from selecting an unrepresentative commodity (even though it was the largest selling item in the line) for price ceiling determination in order to gain a price advantage for his line not in keeping with the intent or purpose of the regulations.

While the election had been made under CPR-22 to use Method 3, the commodity group used in the product line for the computation of the material cost adjusted represented over 50% of the combined sales in the line and did not exclude any commodity the sales of which amounted to less than 5% of the total in the line. Since this conforms with Section 7 of SR-17, no change

was necessary to the base date figures. Therefore, in this case study, the base date from which material and labor cost increases may be figured remains the same as that used under CPR-22 (June 24, 1950) because the election made above conforms with Section 4 (b) of SR-17. This provision is specified in SR-17, Section 5, (2), (iii).

Thus, the base period prices and base period costs for direct material and direct labor as calculated and shown in Column 1 of Exhibit 2, are transferred without change to the first column on the SR-17 worksheet (Exhibit 3); and the same method as followed under CPR-22 is used to determine the cost change to the new cut-off date of July 26, 1951.

A change in procedure from CPR-22 to SR-17 calculations is made in that under CPR-22, direct and indirect manufacturing materials and direct and indirect labor were used in computing the cost adjustment. In the SR-17 computations, the election is to use only direct material and labor costs. The indirect material and labor costs are included in the overhead adjustment calculation (Exhibit 4).

Overhead Adjustment Under Supplementary Regulation 17

We now come to the calculation of the overhead adjustment under SR-17. Reference was made in the description of the price adjustment calculations under CPR-22 to the budget reports, in effect, the factory expense ledgers, which show the elements of factory expense for each plant. These, for the first six months of 1950 and the same period of 1951, are first examined for items which are to be excluded under SR-17 and necessary adjustments made (Exhibit 4, Columns 2 and 5 will serve as illustration).

Also, under SR-17, Section 12 (d), the 1951 overhead may be adjusted if the cost of any element on July 26, 1951 was significantly higher than its average cost during the 1951 overhead period. Examination of the elements indicates that the only one subject to adjustment under this provision is taxes. In the plant used in the study, property taxes are paid on July 1 and equalized in expense over a twelve-month period. Changes in both assessed valuation and tax rates resulted in a twenty per cent increase in property taxes and since charges to expense for the first six months of 1951 were made on the basis of the old property tax rates, the tax element is increased as shown in Column 6 of Exhibit 4 and the result is an adjustment of 16⅔ per cent in the total taxes of the plant.

After this series of adjustments to bring overhead into line with the provisions of the regulations, the dollar figures are the ones to be used in calculating

ARMSTRONG CORK COMPANY
Sales and Actual Costs For
Price Determination Under SR-17

Armolite Floor Covering

	Base Period Costs (a)			July 26, 1951 Costs		
Column No.	Amount (1)	Ratio of Cost to Sales (2)	Per Cent of Cost Increase (3)	Amount (4)	Ratio of Cost to Sales (5)	
Units Sold	10,000M sq.yds.	%		10,000M sq.yds.	%	
Sales Dollars	$3,000,000			$3,000,000		
Actual Factory Cost of Sales						
Direct Material						
Linseed Oil	210,000	7.0	37.0	287,700	9.6	
Rags and Paper	300,000	10.0	22.0	366,000	12.2	
Backing	300,000	10.0	36.0	408,000	13.6	
Packing	120,000	4.0	15.0	138,000	4.6	
Other Raw Mat'l.	510,000	17.0	36.4	695,400	23.2	
Total Direct Raw Material	1,440,000	48.0		1,895,100	63.2	Material Cost Adjustment (5 - 2) = 15.2%
Direct Labor	330,000	11.0	12.0	369,600	12.3	Labor Cost Adjustment (5 - 2) = 1.3%
Manufacturing Expense	480,000	16.0	See calculations on	Exhibits	4 and 5	
Selling Expense	450,000	15.0	*	*	*	* * *
Administrative Exp.	150,000	5.0	*	*	*	* * *
Total - All Costs	2,850,000	95.0				

(a) Period April to June, 1950.

(All products and figures hypothetical)

EXHIBIT 3

the factory overhead price adjustment. Reference here is to Exhibit 4, Column 3 for 1950 and Column 7 for 1951. These figures are for the entire plant. Since all factory overhead is allocated to commodities, the ratio of each item of overhead to the total will be the same for the commodity as for the plant and, likewise, the percentage adjustment for the plant will be applicable to each commodity. (Since no commodity is produced in two plants, there is no problem under SR-17, Section 16 (2) for this section is not applicable.) Therefore, overhead calculations can be held at the plant level.

Now, since the overhead price adjustment must be based on relative unit overhead costs instead of total dollars of overhead, the value of production must be calculated in order to determine unit cost. It must be recognized that this will give effect to volume in each period and it is possible that higher volume in the 1951 period than was experienced in the 1950 period may offset the increase in total dollars of overhead when it is reduced to unit rates, as in the case in this study. This shows at the bottom of Exhibit 5.

The regulations establish "value of production" as the unit to be used in calculating the factory overhead adjustment. Section 11 (c) sets forth the procedure for determining the value of production, and Exhibit 5 shows the cal-

ARMSTRONG CORK COMPANY
Overhead Analysis for Price Determination Under SR-17
Lancaster Plant

	Overhead Period—Jan. to June, 1950			Overhead Period — Jan. to June, 1951			
	Budget Report (1)	Eliminations (2)	SR-17 Elements (3)	Budget Report (4)	Eliminations (5)	Additions (6)	SR-17 Elements (7)
Elements of Factory Overhead							
Salaries	$215,000	$	$215,000	$240,000	$	$	$240,000
Indirect Labor	215,000		215,000	260,000			260,000
Maintenance Labor	89,000		89,000	112,000			112,000
Fuel	45,000		45,000	62,000			62,000
Purchased Power	90,000		90,000	130,000			130,000
Overtime and Shift Premium	50,000		50,000	115,000			115,000
Sundry Supplies	20,000		20,000	33,000			33,000
Maintenance Materials	88,000		88,000	120,000			120,000
Employee Benefit Programs	30,000		30,000	40,000			40,000
Normal Depreciation	130,000		130,000	150,000			150,000
Insurance	30,000		30,000	35,000			35,000
Taxes	85,000		85,000	90,000		15,000(b)	105,000
Emergency Amortization	15,000	15,000	-	20,000	20,000		-
Other Expenses (a)	303,000		303,000	400,000			400,000
Total Factory Overhead	$1,405,000	$15,000	$1,390,000	$1,807,000			$1,802,000

(a) Detail omitted for simplification in this illustration.
(b) Tax bills paid in July, 1951, for year 1951, share of equalization for 1st 6 months.

(All products and figures hypothetical)

EXHIBIT 4

culation as made. The factory overhead dollars are divided by these values of production to arrive at the overhead factors for the respective periods, 15.8 per cent and 13.4 per cent for 1950 and 1951 respectively in Columns 2 and 4.

No elements of distribution and administrative (general) overhead were included in price ceiling determinations under CPR-22. Under SR-17, these overheads may be considered just as are factory overhead. Since all distribution and administrative overhead is allocated to commodities, the computations will be made by commodity group—Armolite Floor Covering. The procedure for arriving at the dollars for each overhead period and making adjustments to the 1951 figures is the same as for factory overhead set forth in Exhibit 4. Therefore, the general overhead adjustment calculations are not shown in an illustration. It is established that the total dollars are $1,200,000 for 1950 and $1,800,000 for 1951. When related to net sales of the periods, $6,000,000 and $15,000,000, respectively, the overhead factors are determined to be 20% and 12%. These are added to the factory overhead factors to arrive at the overhead adjustment to be used in Public Form No. 100.

	1950 Period	1951 Period
Factory Overhead Factor	15.8%	13.4%
General Overhead Factor	20.0	12.0
Total Overhead Factor	35.8%	25.4%

ARMSTRONG CORK COMPANY
Sales and Overhead Costs for Price Determination Under SR-17
Arcolite Floor Covering

MANUFACTURED IN LANCASTER PLANT

Column No.	Overhead Period Jan. to June, 1950 (1)	(2)	Overhead Period Jan. to June, 1951 (3)	(4)	
Total Units Produced	30,000 M Sq. Yds.	% of Value of Production	45,000 M Sq. Yds.	% of Value of Production	
Value of Production	$8,800,000(a)		$13,444,400(b)		
Factory Overhead	1,390,000	15.80	1,802,000	13.40	Factory Overhead Adjustment (4 - 2) = 2.4% Minus
Net Sales	$6,000,000		$15,000,000		

Calculation of Value of Production

	(a) (000)	(b) (000)
Actual Factory Costs		
Direct Material	$4,385	$7,724
Direct Labor	1,210	1,554
Factory Overhead	1,405	1,822
Total Factory Cost	7,000	11,100
+Work-in Process-Jan. 1	4,600	3,000
— " " -June 30	1,000	2,000
Cost of Goods Produced	6,600	12,100
+Finished Goods Inv.- Jan. 1	3,000	4,000
— " " Inv.- June 30	5,100	2,600
Cost of Goods Sold	4,500	13,500

Formula for Calculation

Cost of Goods Produced ÷ Net Sales + Cost of Goods Sold = Value of Production

1950 $\frac{\$6,600M \times \$6,000M}{\$4,500M} = \$8,800,000$ 1951 $\frac{\$12,100M \times \$15,000M}{\$13,500M} = \$13,444,400$

(All Products and Figures Hypothetical)

EXHIBIT 5

The result is a reduction in the overhead adjustment factor of 10.4% from the 1950 to the 1951 period.

Summary of Adjustments Under Supplementary Regulation 17

In summary, therefore, the price adjustment which is permissible under the Capehart Amendment is determined to be:

	1951 Period %	minus	1950 Period %	equals	Adjustment %
Material	63.2		48.0		15.2
Labor	12.3		11.0		1.3
Overhead	25.4		35.8		(10.4)
Total	100.9		94.8		6.1

This adjustment is less than that established under CPR-22, Form 8 (Exhibit 1) which was 16.1 per cent. Since this is the case, it is obvious that ad-

vantage will be taken of the option not to file under SR-17 if the net price adjustment is downward when all segments of the Company are considered. Here consideration must be given to the SR-17 Statement of Considerations which states: "This election, whenever exercised, must, however, be made with respect to all commodities subject to CPR-22, or, under certain circumstances, to all commodities produced in a self-contained unit of a manufacturer's business."

Conclusion

In concluding this paper, we must state that we recognize that "a little knowledge is a dangerous thing." Because of the newness of the regulations, our procedures for calculating price adjustments under SR-17 are based on very little knowledge. We have studied the regulation and made an application of its provisions on the basis of our interpretations. If we have erred, it is hoped that others may detect and profit by our mistakes. If we are right, it is hoped that the work of others will be made a bit easier by our efforts.

CPFF Contracts—More Profit at Less Cost

by RAYFORD W. HARWELL

Accounting Supervisor, Consolidated Vultee Aircraft Corporation, Fort Worth, Texas

Upon the important circumstance that disallowed costs on cost-plus-fixed-fee-contracts are offsets to contract profits, the author of this paper devotes major attention to the timely and intelligent handling of Service or (subsequent) General Accounting Office audit exceptions, whether by conference with audit representatives or the contracting officer, or by formal appeal. The assistance afforded by a statement of company accounting policy, drafted in advance and approved by the contracting officer, is discussed.

BILLIONS OF DOLLARS of CPFF contracts were entered into by various procurement services during World War II and numerous costs were declared to be inadmissible or excludable, apparently based on interpretations of TD 5000, incorporated by reference in many CPFF contracts for the purpose of determining cost under the contracts.

The Stumbling Block of Generality in T.D. 5000

TD 5000 specified costs as being allowable or not allowable. These items presented no question. Beyond this limited field, however, the generality of TD 5000 created substantial problems of interpretation. Section 26.9 (a)(2) provided that allowable costs should, in part, include:

> "(2) the proper proportion of any indirect costs (including therein a reasonable proportion of management expenses) incident to and necesssary for the performance of the contract or subcontract."

The phrase "incident to and necessary for" created most of the difficulties. In an effort to clarify this broad phrase the various procurement branches of the armed services issued interpretations of TD 5000 for the benefit of their cost auditors. It was only natural that many items of cost charged to contracts were not covered by these interpretations and that there was a resulting lack of uniformity in the reimbursement of a great many items of cost.

Applicability and Contents of ASPR Section XV

Much was learned during World War II and the post war years concerning admissability and inadmissability of costs under cost-type contracts, because of decisions by the Court of Claims, the Office of Contract Settlement, the Board

of Contract Appeals, and the Comptroller General. As an expression of much of this experience a comprehensive statement of cost principles, applicable to all of the armed services, was issued and became effective March 1, 1949. Likewise, the Armed Services are now collaborating in the preparation of an audit manual which will be used by the three services as unified in the Department of Defense. The tentative title of this manual is "Armed Services Contract Audit Manual", which will very likely be made available through the Government Printing Office to contractors and to private auditors.

The statement of cost principles is contained in Section XV, Armed Services Procurement Regulation and is entitled "Contract Cost Principles." This section deals with the types of costs which may be allowed in research and development, supply and material, and construction cost-type contracts for the Army, Navy, and Air Force. The statement of contract cost principles is intended to be used by the armed services in order to establish uniform policies relating to the determination of costs in connection with the procurement of supplies and services.

In order for the principles for determination of costs outlined in Section XV to be binding upon the Government and the contractor, the applicable principles must be incorporated in the contract provision directly or by reference. Section XV adds that, on and after the effective date of March 1, 1949, the cost principles shall be made a part of every cost-type contract and that all going cost-type contracts in effect as of that date may be amended to incorporate Section XV in lieu of TD 5000.

The statement sets forth that the general basis for determining costs under cost-reimbursement-type contracts is the sum of the allowable direct costs incident to the performance of the contract, plus the proper allocable portion of allowable indirect costs, less applicable income and other credits. The tests used in determining the allowability of costs also includes reasonableness, application of generally accepted accounting principles and practices, and any limitations as to types or amounts of cost items set forth in Section XV or otherwise included in the contract. It is further specified that failure to include any item or type of cost in the statement of cost principles is not intended to imply that it is either allowable or not allowable. The use of normal or standard costs with appropriate adjustments for variance and unallowable costs is regarded as acceptable in determining amounts of provisional or interim progress payments, but final allowable costs are required to represent actual costs.

The statement devotes a separate section to subjects affecting cost which may require special consideration in connection with the negotiation or performance

of cost-type contracts. The statement contains a check list of such special subjects and directs contracting officers and their negotiators to see to it that special subjects are studied and the appropriate clauses incorporated. Thus, the contractor has the opportunity to make sure that the unusual circumstances peculiar to his business are included in the contract under the "consideration" article and that the specific principles in the statement are adapted to his situation as much as possible.

Impact of Disallowed Costs; Importance of Contract Profits

However, under the expanding defense program it will be impossible to consider in negotiating each contract all of the unusual circumstances that may arise in the performance of the contract or to assume that costs related to these circumstances will be approved as allowable items under the statement of cost principles. No matter how genuine the good faith on both sides, it is to be expected that honest differences of opinion will appear regarding the allowability of particular items.

Any costs incurred and expended under CPFF contracts and not ultimately collected must come from the fixed-fee portion of the contract, thereby resulting in a reduction of the net fee earned under the contract. Since the percentage of profit under fixed-fee contracts is generally less than under fixed-price contracts, it is readily seen that any disallowed or uncollected cost under cost-plus-a-fixed-fee contracts becomes of vital concern to management and to accountants responsible. The problem presented is well-stated from both sides in the following words of Col. Kenneth W. Hurst, Assistant Auditor General of the U. S. Air Force, writing in the January 1951 issue of the *N.A.C.A. Bulletin:*

> "The Government stands to lose in productive effort on the part of industry if contractors cannot realize profit on contracts. Neither is industry properly interested in excessive profit with its essential lack of fairness to the public which must support the military effort and its inevitable political repercussions. Hence, government auditors and industrial accountants have supporting rather than opposing parts to play if the long-range view is taken. This does not mean that differences of opinion will be few. On the contrary, they will be numerous. It is precisely in resolving these differences of opinion that cooperation makes its appearance and the middle course, rather than extremes, is allowed to govern price and cost determinations."

Cost Exception Procedure for Air Force Contracts

At this point it might be well to mention the manner in which exceptions or exclusions are received and the procedure for processing claims under CPFF contracts with the Air Force. It is the duty of the government auditor and his

staff who are completely independent of the contracting officer in the conduct of his office, to audit expenditures made and submitted by the contractor and to render technical assistance to the contracting officer with respect to the audit aspects of the contractor's operation. If the government auditor believes that the expenditures as submitted are allowable items of cost under the contract and under existing regulations, he indicates audit approval on the Standard Form No. 1035 (continuation sheet for Standard Form 1034) and submits Standard Form No. 1034, "Public Voucher for Purchases and Services Other than Personal," together with supporting papers, to the contracting officer. If the contracting officer determines that the expenditures made by the contractor and approved by the government auditor represent reasonable expenses which are incidental and necessary to the performance of the contract, he certifies the voucher for payment by signing the Form 1034 and forwards it to the appropriate finance officer. The finance officer thereupon issues a government check to the contractor in payment of the expenditures covered by that particular voucher.

On the other hand, when the government auditor discovers an item in a contractor's claim which he considers to be ineligible for reimbursement, he prepares a DD Form 396—"Notice of Costs Suspended and/or Disapproved," on which he lists the costs as either "Suspended" or "Disapproved." He then signs this form and deducts the total of the amount questioned from the public voucher, Standard Forms 1034 and 1035. Audit approval is then indicated on the Standard Form 1035 and the complete voucher, together with all supporting papers, is forwarded to the contracting officer.

The contracting officer, if he concurs with the auditor, certifies the voucher and signs the attached DD Form 396. "Notice of Costs Suspended and/or Disapproved," before forwarding the voucher to the finance officer for payment.

As will become apparent in the next few paragraphs, this new Defense Department Form 396, instructions for which were issued under Joint Letter No. 19, (which established certain unity of approvals in service audits) can become a "dangerous document" for the contractor if the time established by each form is not closely guarded and controlled.

Copies of the DD Form 396 are furnished the contractor who is required to acknowledge receipt of the notice on one copy, in the space provided. This notice constitutes advice of costs suspended and/or disapproved incident to the audit of the particular voucher and states that:

> "Suspended costs, as referred to herein, are costs which, for the reasons shown below, appear questionable, but on which final determination has not been made. Disapproved costs, as referred to herein, are costs which, for the reasons shown below, have been determined by the undersigned to be unallowable.
> "If you do not concur in the action taken herein, with respect to cost items disap-

proved, a period of not to exceed ——— (——) days from receipt of this notice by you will be allowed for the presentation of additional information or justification in support of such items. If additional information or justification is not received within the time prescribed, disapproval of the costs will be presumed to be concurred in by you and will become final and conclusive subject to the express provisions of the contract relating to written appeal."

Sixty days are usually allowed for the resubmission of any cost "suspended." Such cost should be resubmitted in a separate voucher marked "resubmission," containing complete documentation and a full explanation of the reason for resubmission, including, if necessary, references to provisions of the contract or applicable regulations. If the "suspended" cost is not resubmitted within this time, the auditor prepares a supplement to the DD Form 396 transferring the cost from "suspended" to disapproved."

Thirty days are usually allowed for the presentation of additional facts concerning any disapproved cost, in the form of either a resubmission voucher or a letter to the contracting officer. If this is not done within the prescribed period, the disapproved cost becomes, as stated above, "final and conclusive subject to the express provisions of the contract relating to written appeal."

Most CPFF contracts provide in the standard "disputes" article that written appeal may be submitted within thirty days from the date the cost becomes final. However, the contracting officer may, for good cause shown, correct, amend or rescind his final decision, within the thirty day period provided for, but prior to, the filing of an appeal by the contractor.

The various time limits make it important that a contractor follow closely the provisions of his CPFF contracts and protect his rights by giving proper and timely notice under the conditions of the DD Form 396 and/or by protesting to the contracting officer as questions of disallowance arise during the performance of the work. Sometimes a conference with the contracting officer or the members of his staff prior to the issuance of a final decision will serve to effect a mutual understanding and reconsideration of a disapproved cost. A contractor should exhaust every administrative effort to settle a disputed item, and appeal only those disputes which he honestly believes have merit. The procedure for the submission of an appeal before the Armed Services Board of Contract Appeals from a decision of a contracting officer is contained in Appendix "A" to the Armed Services Procurement Regulations.

Cost Exceptions Arising from G.A.O. Post-Audit

In connection with CPFF contracts, it is the function of the United States General Accounting Office, the representative of the comptroller general, to

perform a "post audit", i.e. to re-examine the situation after the contractor has made the expenditure and has been reimbursed. Where field audit procedures have been established by the General Accounting Office and the field representative believes certain cost to be not authorized by the contract, he issues an informal inquiry to the local government auditor. If the GAO representative is not satisfied with the reply to the informal inquiry, he issues a formal exception to the finance officer instructing him to make deduction for the amount from the next voucher presented by the contractor.

Since the contractor is concerned in the issuance of any formal exceptions, it is well if the contractor would ask the local government auditor to furnish copies of any GAO informal inquiries he receives and to assist the auditor in the preparation of his replies to insure that they are supported by full and adequate findings, information and documentation. This should minimize formal exceptions.

If the contractor desires to make subsequent claim for the amount of GAO formal exceptions set off or collected by the disbursing officer, separate public vouchers (Standard Forms 1034) marked "reclaim voucher" must be submitted through the local government auditor, contracting officer and disbursing officer for transmission through the fiscal director to the comptroller general for decision and appropriate action.

Each reclaim voucher must have attached all necessary documentary evidence including:

1. A full statement explaining and justifying the claim.
2. Copies of informal inquiries involving the item or items set off, together with replies thereto.
3. Copies of the GAO Notice of Exception (Standard Form 1100-rev.) involving the item or items set off.
4. Copies of all pertinent documents supporting the voucher for the original claim. If the supporting original documents were retained by the government auditor, a statement should be made that original documents are in the government files.
5. A statement to the effect that the deduction for which reclaim is being made was deducted on D.O. Voucher No. —— dated ———— account of———— Disbursing Officer.
6. Any additional evidence not previously submitted in support of the claim for reimbursement.

Since the action of the comptroller general can be reviewed only in the courts, it is very important that the views of the General Accounting Office be taken into consideration not only during the preparation of the CPFF contract by describing specific allowable items of cost contained therein, but also in the performance and accounting administration of the contract.

A contractor who is dissatisfied with the decision of the contracting officer, Board of Contract Appeals or the comptroller general may institute action

against the United States, either in the Court of Claims or a Federal District Court. However, all administrative remedies must have been exhausted and an administrative decision by the Contracting Officer must have been obtained.

The Exacting Task of Preparing the Company's Reply

It might be well to mention here the procedure preceding an exclusion of an overhead expense. In plants with cost-type contracts the contractor charges items of overhead in the consistent and normal manner to his overhead-expense accounts. The government auditor, more or less concurrently, reviews the charges to the overhead-expense accounts and advises the contractor from time to time, of those items which will be excluded from overhead applicable to the cost-type contracts. Treatment of such items must be settled before the submission of the contractor's final overhead claim for the fiscal year or the exclusions, if not deleted and conceded by the contractor, will be included on a DD Form 396 and subjected to the procedure which has been described.

The contractor should be prepared to investigate all exclusions, exception or inquiries initiated by the government auditor, contracting officer or the General Accounting Office, and to present a claim for each item which he believes to be allowable under the provisions of the contract or the applicable regulations. With respect to unusual types of expenditures and items of cost not enumerated in the contract or the cost principles, the contractor should, wherever possible, request the contracting officer's approval of such items as reimbursable cost before they are incurred. Such predetermination, particularly in overhead items, will tend later to reduce the volume of paper work for the contractor, contracting officer and the government auditor.

When the accountant responsible for the documentation and submission of cost under the CPFF contracts has collected the data and information regarding a particular government exception or disallowance and the data is complete as to fact and sound as to conclusion, his task has just begun. More people are capable of arriving at sound conclusions than are capable of expressing them. Many accountants think that the job is done when all of the facts are obtained and a definite conclusion has been reached, because they do not realize that the administrative officer who will make the decision in the matter has seen little of the basic work and will judge the results entirely by the completeness and manner in which the evidence is presented.

Just as a plan is needed in building a house, an outline plan is necessary in organizing the facts and data for final presentation, if the writer is to avoid poor results. Only a lazy or incompetent accountant never makes an outline for

a claim, and one of two things is true of his results. Either he rewrites his complete claim many times, which means wasted time and money, or his final effort is bad. Outlines may vary from simple to elaborate but the good writer has some planned goal—or else none is reached. It is easier, quicker and more efficient to rewrite an outline than to reorganize a complete claim.

One indispensable quality of a good letter or claim is accuracy. By this is meant not merely correctness as to details of fact but something more comprehensive, including definiteness and completeness—in short, truthfulness with respect not only to explicit statements but also to implications. Along with this indispensable quality is reality, simplicity, forcefulness, and vividness of expression. No matter how technical the subject, the claim should be written in a language as simple as the writer can command. Care should be taken to put the details of the claim or letter in orderly arrangement, never neglecting the qualities that make for an agreeable impression.

Other requirements of preparing a good claim are courtesy and consideration. There is no place in any claim for anything approaching surliness, any more than for sneering or insinuation. If it is necessary to write about an unpleasant subject, the presentation should be free from any suggestion of sharpness, rudeness, or personal animus.

Letters of a contractual character call for the utmost definiteness and accuracy, for completeness, directness, and conciseness, and for careful restraint. In summary, the accountant with the proper requisites of temperament, training, and ability should be able to submit a claim which is clear as to objective, strictly to the point, complete as to facts, logical in correlation of data and facts, sound in its conclusions, intelligible in organization, and attractively arranged and typed.

A Place for Co-operation

In the large-scale procurement program, such as that now being entered upon, there will be many cost reimbursement type contracts in existence for a long time. As mentioned before, the problems of settling allowability of cost incident to these contracts will continue to be important to many companies and to many accountants. Likewise, the increase in the number and size of contracts will place considerable strain on existing government personnel and will require the utmost assistance from the contractor. The government has to be much more exact in its records than may be necessary in similar commercial transactions, but contractors will get their money with reasonable promptness if they make an honest effort to comply with the contracting officer and his requirements.

Industrial executives and accountants of organizations in defense work with cost reimbursement type contracts should acquire an adequate working knowledge of the rules and procedures under which these contracts should operate. They should conscientiously do their best to make changes which will reduce unnecessary cost, increase productive effectiveness, and establish definite internal controls.

Comprehensive Statement of Accounting Policies a "Must"

In determining the allowability of costs it is believed that favorable recognition should be given to the efficiency of the contractor or subcontractor, with particular regard to the attainment of quantity and quality production, reduction of costs, adequacy of internal controls, and economy in the use of materials, facilities and manpower. This is consistent with the spirit of the Budget and Accounting Procedures Act of 1950, Public Law 784, approved September 12, 1950, Section 111(e) of which provides that emphasis should be placed, among other things, on the elimination of those accounting and auditing requirements which involve duplication or which do not serve a purpose commensurate with the costs involved. The article by the present author, "CPFF Materials Cost Reimbursements at Less Cost", which appeared in the September 1951 issue of the *N. A. C. A. Bulletin,* contained this statement:

> "With this possibility in mind, for the simplification of government audit requirements, companies with CPFF contracts should re-examine their present accounting systems. They should weed out any features which they deem too costly and burdensome in relation to the accounting results."

The objectives to be accomplished in such a re-examination of company policies, systems and procedures should be:

1. To reduce any unnecessary cost.
2. To assist the responsible government personnel in the reduction of exceptions or exclusions in the audit and processing of claims.
3. To assist the contractor in the protection of the fee or profit under his contract.

Such a plan should include the adoption of approved and consistent accounting policies and the initiation of a positive, continuous and complete procedures development and improvement program.

A written statement of accounting and management policies applicable to the particular contractor and his business must be approved by the contracting officer. TM 14-1000 "Administrative Audit Procedures for Cost-Plus-a-Fixed-Fee Supply Contracts" says:

> "Such a statement is essential to the review and evaluation of the contractor's internal control and for the determination of the allowability of costs through the application of auditing procedures."

This statement, covering matters affecting reimbursement claims under the contracts, will usually include:

1. Inventory policies, including basis of pricing, classes of material and supplies inventories, and how frequently inventories are taken.
2. Plant and equipment, including additions, disposition, depreciation, rearrangement, and allocation of overhead to items constructed by contractor for own use.
3. Deferred charges, including types of items deferred and basis of write off.
4. Accruals, including types of items accrued and basis of accrual.
5. Wage policies, including overtime payments with respect to hourly and salaried employees, group and other insurance, vacations and sick leave, travel time, separation pay, bonuses, Christmas gifts and pensions.
6. Application of overhead, including the justification of the basis of overhead allocation and the types of charges ordinarily included in overhead but which are to be charged directly to the contract.
7. Policies with respect to intercompany and interdivision sales and transfers, including the basis of pricing.
8. Policies for reimbursement of employees for travel expense.
9. Treatment of surplus, obsolete, and salvage material.
10. Treatment of miscellaneous income such as rent, cash discounts on items charged to overhead, vending machine income, unclaimed wages, etc.
11. Classification of accounts to provide for the segregation of all items of expense not allowable as cost under the terms of the contract and applicable regulations.
12. Any other accounting or management matters which may be peculiar to the particular contractor.

Once approved, the contractor's accounting policies should be followed consistently throughout the performance of the contract, unless changes in his organization or operations occurring during the life of the contract warrant or require a change in the policies. In such instances, the policies should be amended by the contractor and the contracting officer's approval obtained on the amendment.

Recital of Procedures Should Be Inclusive

A procedures program should not be limited to the area of accounting activity, but should comprehend every department or area where action is facilitated or controlled by paper work. The program should include at least the following typical, basic procedures common to manufacturing companies and affecting the performance of cost-type contracts:

1. Cost quotations and delivery estimates of products and services.
2. Engineering changes, including processing, control and submission of cost estimates.
3. Purchasing and receiving, including issuance of purchase requisitions, conduct of supplier negotiations and preparation of quotation requests, issuance of purchase orders and purchase order change notices, processing vendor cancellation claims, receipt and inspection of incoming materials, issuance of rejection notices and the return of rejected material.
4. Material accounting and control, including pricing and charging of material receipts and withdrawals, maintenance of inventory records, accounting for scrap and rework, physical verification of inventories, disposition of surplus and

obsolete material, control of operating and maintenance supplies, control of Government furnished property.

5. Accounts payable, including verification and approval of invoices, approval and distribution of freight charges, recording and distribution of payables, and payment of invoices.
6. Billing, including the issuance of invoices, preparation and documentation of claims under the cost reimbursement contracts, billing records under the contracts, control of government exceptions, authorizations and write off of conceded and unallowable cost, audit and accounting for outgoing material and the accuracy of a status report which sets out the summary and analysis of unreimbursed costs.
7. Timekeeping and payroll, including time recording and verification, payroll preparation and distribution of payroll checks, maintenance of payroll records and labor cost distribution.
8. Employment and employee relations, including hirings, transfers, rate changes, terminations, leaves of absence, and reclassifications.
9. Manufacturing and order, including preparation of design specifications, bills of material and operation sheets, issuance of factory work orders and job orders, production scheduling, dispatching, expediting and reporting.
10. Inspection and quality control.
11. Accounting and control of research and development projects, and building or equipment repair jobs.
12. Facilities accounting and control, including authorization of capital expenditures and maintenance of capital equipment records.

Necessary Reliance on Internal Control

Both corporate management and government agencies must rely on internal auditing for the maintenance of, to repeat, a positive, continuous and complete procedures development and improvement program, recognizing that no system of internal control is complete without internal auditing. The experience and training of the internal auditor and the government auditor should supplement one another. The government auditor has, or should have, a broad, general experience in many fields of accounting and auditing. The internal auditor, on the other hand, is specifically and thoroughly acquainted with his particular company and the peculiarities of the accounting problems of his industry.

The internal auditor and government auditor must sit down together and mutually agree on their respective programs. A unified audit program must be established to determine that duplication is eliminated, that manpower is used to the best advantage, and to assure the continuance of sound accounting procedures and practices in the assembly of all cost accumulations and payments upon which the contractor bases charges to cost-plus-a-fixed-fee contracts and the claims for reimbursement of such paid cost.

Executives, industrial accountants and internal auditors can meet all of these problems of CPFF contracts by good planning, intelligent analysis and hard work. The effectiveness with which this goal is accomplished will be measured by more net fee being retained by the contractor and less cost being expended by the government for the performance of CPFF contracts.

Preparing to Report for Renegotiation

by GARRETT E. KAUFFMAN

General Accountant, The National Supply Co., Pittsburgh, Pa.

Review of provisions of the Renegotiation Act of 1951 and discussion of principal forms to be filled out under it,—especially portions calling for determination of renegotiable sales, financial statements, and cost allocation bases—are contained in this paper which cites procedures adopted in the author's company. Closing emphasis is given the presentation of information on the six "statutory factors" which the law requires the renegotiation authorities to recognize in considering whether or not excessive profits are present.

THE RENEGOTIATION ACT OF 1951, successor to the 1948 Act, subjects to a determination by the Renegotiation Board the question of whether or not a contractor has realized excessive profits in income received or accrued on broad categories of Government contracts during the contractor's fiscal or calendar year. This review is made on an over-all basis and not on each contract individually, unless the contractor requests otherwise.

In aproaching renegotiation it is essential to understand that it is a matter of individual negotiation and not one of more or less exact computation based upon a well defined set of rules, regulations and precedents. It is up to a company to justify its profits on renegotiable business. The amount of refund to the Government, if any, depends in large part upon how convincingly the case is presented.

GENERAL REVIEW OF THE LAW

The Renegotiation Act of 1951 was approved by the President and became law on March 23, 1951 effective as to receipts and accruals after January 1, 1951.

Contracts Subject to Renegotiation

Unlike previous Acts, the application of the 1951 Act is not based on the date any particular contract is made or completed, nor upon the Government appropriation which it charges, nor upon the particular forms of procurement, that is, whether negotiated or let by competitive bids. Rather, the 1951 Act applies to receipts or accruals of a contractor or subcontractor on or after Janu-

ary 1, 1951, under any contract with one of the Departments or agencies procurement of which is covered by the terms of the statute:

Department of Defense, Army, Navy, Air Force, Commerce, General Services Administration, Atomic Energy Commission, The Reconstruction Finance Corporation, the Canal Zone Government, the Housing and Home Financing Agency and such other agencies of the Government exercising functions having a direct or immediate connection with the national defense as the President shall designate.

Thus the 1951 Act on its face is given retroactive application not only to existing contracts with specified departments and agencies of the Government, but to receipts on and after the effective date of the act and accruals under contracts and subcontracts antedating it. On the subject of subcontracts it is important to remember that subcontracts of any tier are subject. Furhermore the term "subcontract" includes any purchase order or agreement and it is not limited to formal contracts.

A renegotation clause or reference thereto is required by law to be inserted in all subject contracts and subcontracts. However, its absence does not affect renegotiability in any way, except to make its determination more difficult and laborious.

It is interesting to note that excepted from the application of the act to receipts and accruals after January 1, 1951, are receipts and accruals attributable to performance prior to July 1, 1950 under contracts and subcontracts which would not otherwise be subject to the 1948 Act. I have not yet learned what is meant by performance. However, for practical reasons and small amounts involved our company has construed it to mean that sales invoiced prior to July 1, 1950 are exempt if not on a contract subject to the earlier act.

The act provides that it shall not be applicable to receipts or accruals attributable to performance after the terminal date, December 31, 1953. This terminal date may be reasonably expected to be extended if the present scale of procurement continues.

The profits limitations of the Vinson-Trammell Act and the Merchant Marine Act, 1936 are inapplicable if any of the receipts or accruals are subject to the 1951 Renegotiation Act. As applied to the Merchant Marine Act, 1936, it is specified that contracts are exempted from the profit limitations of that Act only if entered into *after* December 31, 1950.

Contracts Which Must Or May Be Exempted

The 1951 Renegotiation Act sets forth the following mandatory exemptions:

1. **Any contracts between a department and any territory, possession, state or political subdivision thereof or foreign government.**

2. Any contracts or subcontracts for an agricultural commodity in its raw state or first form or state customarily sold.
3. Any contract or subcontract for the product of a mine, oil or gas well or other minerals or natural deposit or timber if not processed beyond first form or state suitable for industrial use.
4. Any contract or subcontract with public utilities for services furnished at regulated rates, etc.
5. Any contract or subcontract with charitable and educational institutions, with certain limitations.
6. Any contracts not having direct and immediate connection with the national defense as prescribed under regulations to be issued by the Renegotiation Board.

Subcontracts under the foregoing mandatorily exempted contracts are themselves exempt from renegotiation. In addition, subcontracts for office supplies come under the mandatory exemptions.

Provision is made for partially mandatory exemption under the 1951 Act whereby the renegotiable portion of the receipts and accruals from subcontracts for new durable productive equipment is that portion of total receipts and accruals which five years bears to the equipment's average useful life for tax purposes.

Under the 1951 Act the board is authorized, in its discretion, to exempt from some or all of the provisions of the act:

1. Any contract or subcontract to be performed outside of the territorial limits of the continental U. S. or in Alaska.
2. Any contracts or subcontracts under which, in the opinion of the board, the profits can be determined with reasonable certainty when the contract price is established.
3. Contracts adequate to prevent excessive profits.
4. Any contract or subcontract the renegotiation of which would jeopardize secrecy required in the public interest.
5. Any subcontracts as to which it is not administratively feasible to determine and segregate profits.

It should be noted that these exemptions do not automatically filter down to all subcontracts under exempted contracts. The board may exempt contracts and subcontracts either individually or by general classes or types.

Important Miscellaneous Provisions of the Act

To be subject to renegotiation under the 1951 Act receipts or accruals in a contractor's fiscal year after January 1, 1951 must be more than $250,000. In determining whether receipts or accruals aggregating this amount have been realized, the receipts or accruals of all persons "under control of or controlling or under common control with" the contractor are included. Intercompany sales are excluded. This exclusionary floor is also a limitation below which profits may not be eliminated.

The 1951 Act requires the Board to conduct renegotiation on a consolidated basis with a parent and its subsidiary corporations which constitute an affiliated

group for Federal income tax purposes if all of the corporations included in the affiliated group request renegotiation on this basis and consent to the regulations which the board shall prescribe.

The 1951 Act requires the commencement of renegotiation proceeding within one year after the contractor's mandatory statement (further described in later paragraphs) is filed and the renegotiation proceedings must be concluded within two years after they have commenced. Also, there is provision for finality of agreements made for the elimination of excessive profits, except upon a showing of fraud, malfeasance or willful misrepresentations of a material fact.

The 1951 Act, for the first time, places the administration of contract renegotiation in a board independent of the departments whose contracts are subject to the act.

Any contractor or subcontractor may petition for review by the United States Tax Court of an order by the Renegotiation Board. Such proceedings before the Tax Court do not constitute an appeal, but a new proceeding to determine the amount of excessive profits, if any. The Tax Court may find more or less excessive profits than found by the board and no appeal from the Tax Court's decision can be made.

THE REPORTING REQUIREMENTS

The primary objective of a contractor subject to the act is to comply with the filing requirements under it. These in turn will result (it is hoped) in the successful conclusion of renegotiation proceedings without a finding of excessive profits. The filing requirements are two;

1. Standard Form of Contractors Report Form MRR 702, which must be filed on or before the first day of the fourth month following the close of the contractor's fiscal year. (It should be noted that despite contractor objections the deadline for filing under the 1951 Act has been shortened by two months as compared to the 1948 Act.)
2. Contractors Information and Work Sheet Form MRR 704 is filed at such time as the Government commences renegotiation proceedings with the company. This presentation is the heart of the contractor case before the renegotiation division to which he is assigned.

Standard Form of Contractors Report

The essence of this report is a statement of the amount of renegotiable business for the year, a statement of the methods by which such amounts were determined and certain normally available financial data (published annual report, report of independent public accountants, etc.) A company having a large percentage of total business renegotiable would probably find the statistically con-

puted percentage method (widely used in World War II) more desirable than an exact determination of renegotiable sales. However, in a period of partial mobilization such as at present, many companies (our own included) may not have a sufficiently large percentage of renegotiable business to warrant such "paint brush" tactics.

The company's digest of renegotiation law and regulations together with the procedures outlined therein for sales, purchasing and accounting personnel has been submitted to the renegotiation authorities as evidence of the conscientious attempt of the company to determine and report all renegotiable business which meant that no repeat work is required to develop sales data.

Company Procedure For Sales Segregation

The following method is used by National Supply to separate negotiable sales from the total of all sales:

1. Key sales, purchasing and accounting personnel throughout the company are provided with a copy of the above-mentioned digest of the renegotiation law and regulations and an interpretation as it applies to our operations. The memorandum also outlines responsibilities and reports required of sales and accounting departments.
2. A heavy responsibility falls upon the sales department. It must, of necessity, identify renegotiable business since it is in direct contact with customers. The task is particularly difficult in respect of the customer (usually a smaller subcontractor) who has little or no idea himself of the meaning of renegotiation.
   (a) Sales management personnel who are furnished with the digest of the law and regulations are charged with the task of disseminating at least the rudiments of renegotiation to all sales offices and salesmen in the field.
   (b) These salesmen are particularly cautioned to be alert for the type of customer previously mentioned who does not realize he has renegotiable business. Type of product, presence of government contract or appropriation numbers, knowledge of customers' business, and point of delivery (such as to an air base) are singled out as warning signals in this difficult job. "DO" rated orders and CMP references may also be indicators of defense business.
   (c) A form letter questionnaire is provided for sales offices to send to customers in order to secure information to properly determine the renegotiable status of doubtful orders.
   (d) The sales department prepares a monthly report of renegotiable orders received.
      (1) One copy goes to the appropriate division accounting department to enable preparation of a report of renegotiable orders billed.
      (2) One copy is sent to the purchasing department so that it may appropriately stamp with the renegotiation clause, our own purchase orders for material to be used on renegotiable business.
      (3) One copy is routed to the general office responsible for the preparation of renegotiation reports.

3. As noted above, each division accounting department prepares a report of renegotiable sales billed, using as a guide a copy of the sales department reports of renegotiable orders received. These reports on billings also show analyses of renegotiable sales: by type of contract (prime, sub, etc.) and by function performed (manufacturing, assembling, distributing). They form the basis of the data presented in the Standard Form of Contractors Report. The accounting department reports of billings also includes the inventory cost of sales on each order. Cost data is required only in the Contractors Information and Work Sheet. Consideration of this second principal form will be the chief concern of the remainder of the present article.

Contractors Information and Work Sheet

The importance of the Contractors Information and Work Sheet cannot be overemphasized. It is the report which shows the company's sales, costs and profits segregated as between renegotiable government business and ordinary business. Furthermore, it must tell the company's story as to what costs were incurred, why they should be segregated between renegotiable and ordinary business as shown and why the profit is justified on the basis of results achieved for the defense effort.

It is important to remember that this is the form which gives the government renegotiator and financial analyst all of the information concerning the company and constitutes the basis for determination of whether or not excessive profits have been realized. Certainly a sketchy or haphazard presentation can, at best, only result in requests for additional information. For satisfactory results, it is desirable to offer a thorough report setting out all information sought, especially on the statutory factors about which more is said later in this paper.

Many sections of the report (there are 14 in all with countless subsections) call for factual data which, as long as it is carefully prepared and coordinated with the other sections of the report, requires no special mention. To the more significant sections, the following paragraphs are devoted.

Sections A and H of the Contractor's Information and Work Sheet relate, respectively, to financial statements and allocation of costs to renegotiable business. Profit and loss data must be submitted on a Federal income tax basis.

The Internal Revenue Code furnishes the general criterion for the allowance and deduction of costs and expenses. Donations are not allowed as a deduction nor are selling and advertising expenses except under certain qualifying circumstances. The Renegotiation Act does not permit the carry-over or carry-back of losses, as allowed for tax purposes. However, a one year carry-over of losses on renegotiable business is permitted so long as it was not attributable to the gross inefficiency of the contractor. Such privilege commenced with fiscal years ending on or after January 1, 1951.

A contractor is permitted to determine costs and the allocation to renegotiable business in accordance with the method of accounting regularly employed, unless in the opinion of the board such costs do not correctly reflect the results of operations. As a general principle, it may be stated that the cost of sales (raw material, direct labor and overhead) should be separable for renegotiable and nonrenegotiable business under the established cost accounting system of the company, with a fair degree of accuracy and with a minimum of allocations based strictly on the distinction betwen government and regular business.

It is in the area of other expenses that deliberate prorations between renegotiable and nonrenegotiable business must be made. There is no prohibition against the use of differing bases of proration in the distribution of various expenses. Obviously, prorations based on sales dollar values or cost of sales or direct labor hours or direct labor costs may produce widely varying results.

The methods used and the reasons for their use should be adequately and convincingly described in reporting to the board because, in the final analysis, any method may be used so long as the board agrees that costs have been properly reflected.

It should be borne in mind that particularized treatment of various expenses may also have some disadvantages. Perhaps primary among these is the greater difficulty of determination and the necessity of supporting the reasonableness of each variation. Furthermore, while the first year's computations may be made on the basis most favorable to the company, it is possible that the board might consider these methods as establishing precedents which may not be as advantageous in the future. The contractor, therefore, should not overlook the advantages of a simpler, broad-base, proration of expenses.

Allocation Principles Adopted by National Supply

The general principles of cost segregation used by National Supply are:

1. At the level of the plant or division having the renegotiable business:
   (a) Inventory cost of sales—Segregation of actual costs or standard costs is made on the basis of regular cost data available.
   (b) Cost of sales adjustments (i.e. variances, over/under absorbed burden, etc.), plant administrative, selling and warehousing and shipping expenses—Proration is made on the ratio of inventory cost of sales of renegotiable business to total inventory cost of sales for the plant.
2. Headquarters administrative and general expenses (including sales promotion and advertising) and bond interest and expense.

   Proration is made on the basis of the ratio of inventory cost of sales of renegotiable business to total consolidated inventory cost of sales of the company and its subsidiaries.

Where an account within any of the broad classifications under the second heading (bad debts for example) is manifestly not related to government business it was omitted in making the allocations. Certain accounts, such as donations are excluded because of statutory prohibition.

However, it should be noted that advertising was prorated at the headquarter level despite certain regulatory provisions to the contrary (unless the advertising meets certain tests). Similarly, reasonable amounts of selling expenses are prorated to renegotiable business. The points have been stressed in the past that most of the company's business has been under subcontract thereby making ordinary advertising and selling activities necessary and making it necessary also to maintain the regular organization of the business despite the defense work.

Price Record of Renegotiable Business

The contractor should put his best foot forward by calling attention to any price reductions made as work under renegotiable contracts progressed and the resulting total saving to the government on the number of units which have been delivered at the new price.

Statement of "Statutory Factors"

One of the most difficult sections of the report to prepare is Section N relating to certain considerations which the Renegotiation Board is bound by law to recognize, yet it is the best place for the contractor to justify the results he has achieved. The entire concept of renegotiation is summed up in the statutory factors. The renegotiation law sets up no percentage above which profits will be considered excessive. It seeks, rather, to give weight to all of those factors entering into a job well done for the defense effort. Whether this approval is proper and, more important, whether it works out beneficially in the final analysis, has been the subject of some controversy. Nevertheless, the renegotiation law is on the books and the statutory factors are the tools with which the government renegotiator and financial analyst must work.

It behooves the contractor to give the government's representatives plenty of material to work with. To that end, the preparation of this section should, in its entirety, seek to bring out the Company's activities in the light of the six factors which the act recites:

1. Efficiency of the contractor.
2. Reasonableness of costs and profits.
3. Capital employed.
4. Extent of risk assumed.
5. Contribution to national defense.
6. Character of business.

The law and the regulations give the key to the type of information the government is seeking. The contractor must marshall all the financial and factual data from operating personnel as well as accounting, in order to make a convincing presentation. Risks involved in the work, complexity of processes, willingness to undertake a job perhaps shunned by others because of difficulties anticipated, special equipment required, etc., should all be given thorough coverage.

This is also an advantageous section in which to blend comments accounting for any differences between renegotiable and ordinary business having operating significance, which may be brought out in the cost and profit data submitted. For example, attention might be called to the fact that costs at the plant having the bulk of renegotiable business are higher than for other plants of the company. This comment will tend to dispel any thought that costs of renegotiable business may be unduly weighted if the figures show them to be higher than for the company as a whole. As another example, perhaps an unusually high profit on the renegotiable business of a particular plant may be the occasion for comment. It will help if it can be pointed out that these sales are a very small part of total renegotiable business or that the high profit was due to an unusually successful run of product (much better than average).

A Law Which Requires the Best in Administration

The Renegotiation Act does not and cannot guarantee the fair and uniform treatment of all contractors. The determination of excessive profits is based upon the board's opinion, so that any hope of reward commensurate with efficiency or risk taking is a matter of faith. It is impossible to judge whether or not one company's settlement is reasonable in comparison with other concerns' treatment. While our own past experience with renegotiation and its representatives leads us to believe that the renegotiation acts have been administered with integrity and judgment, it is not amiss to watch the presence or absence of these essential elements of fairness in so difficult an understanding as identifying amounts of profits as excessive.

An Experiment in Productivity Measurement

by WILLIAM LANGENBERG

Manager, Cost Division, Johnson & Johnson, New Brunswick, N. J.

Attention is called in this article to the current interest in development of a method of comprehensive productivity measurement which may be relied on for practical purposes, and to the beginnings of a literature on the subject. Measurement of the output and input factors is given descriptive presentation and, in the latter portion of the paper, a case application of productivity measurement is offered.

EVALUATION OF PERFORMANCE is an established principle of American management. Criteria have been developed for short-term measurement in the form of budgets, standard costs and similar measures. Criteria for long-term evaluations are not so readily available, especially in multi-product industries.

Industrial management has accepted and used standards for evaluation more readily than other forms of management, primarily because of the more direct relationships of the factors involved. For example, in measuring the production obtained from a machine, it is easy to obtain automatic counting of pieces or yield and the result can be directly related to human or machine time.

Long-Term Measurement Not Easy to Achieve

These current measures of production furnished to industrial management in any good cost system have aroused the interest in long-term comparisons. Very often this interest is expressed in the desire for a single yardstick of evaluation. While most industrial accountants recognize the value such a measure would have, they also recognize the inadequacy of any one measure to evaluate and reward performance. Moreover, the significant amount of capital investment in the past decade raises added questions, relating to the yield and return on the money invested in the facilities of production.

Management interest in productivity has been matched just recently by the interest of labor in productivity as a basis for securing wage adjustments. The Wage Stabilization Board has given its blessings to the use of increased productivity as justification for wage rate increases, but it is doubtful if the subject has received the attention which it requires. In fact, a search for suitable research material quickly reveals the lack of published data on the subject of productivity and, as said above this lack is especially true of multi-product industries.

REFERENCES ON PRODUCTIVITY MEASUREMENT

Survey of Current Business—September, 1951
U. S. Department of Commerce

Recent Productivity Trends and Their Implications
W. D. Evans, U. S. Bureau of Labor Statistics, 1947

Productivity and Progress, May 16, 1946
National Industrial Conference Board, Inc.

The Miracle of Productivity, 1947
National Industrial Conference Board, Inc.

Measurement of the Effectiveness of the Productive Unit, 1948, 1949
British Institute of Management

Measurement of Productivity, Application and Limitations, 1951
Joint Committee of the Institute of Cost and Works Accountants and the Institution of Production Engineers

Productivity Measurement in British Industry, November, 1950
Anglo-American Council on Productivity

EXHIBIT 1

A listing of the material suitable for reference will be found in Exhibit 1. It is accorded this position to give prominence to the sources which do exist. It is interesting to note that the publications issued by the U. S. Department of Commerce and the U. S. Department of Labor consider the problem of productivity on a national basis only. On the other hand, the papers which are printed in Britain deal primarily with problems applicable to industry.

The remainder of this paper is presented in two parts, viz.:

1. Theory of productivity measurement.
2. Application of productivity measurement.

THEORY OF PRODUCTIVITY MEASUREMENT

Productivity, as defined by the U. S. Department of Labor, means "the measurement of productive efficiency using the expenditure of human effort as a yardstick." The department also states that better processes, better machines, better handling of materials, and better organization of jobs contribute to the steady improvement of productive efficiency. This supplement to the definition is of importance because it ties in with the Wage Stabilization Board reference to "increased productivity resulting from improved managerial techniques and technological advances." In other words, the U. S. Department of Labor measures productivity, under its primary definition given above, as related to expen-

diture of human effort, whereas management is or should be concerned with measurement of all effort. The first concept involves a single element of cost while the other usually includes several.

Industrial productivity usual refers to the expenditure of resources in a number of ways to produce goods. A measurement of productivity, therefore, requires an evaluation of the physical units of production (output) and the various expenditures of resources such as labor, machines, floor space, capital invested, etc., (input). Since productivity expresses the relationship between output and input, it follows that a more efficient usage of any of the factors included in input will bring about an improvement in productivity. This concept of measuring the "efficient expenditure of a number of resources" is particularly emphasized in the British publications listed in the bibliography. The complexity of the problem make it obvious that there is no standard method of measurement which may be applied by all industries.

What It Involves to Measure Input and Output

Production in a single process industry may be computed on a single physical basis such as tons, pounds, etc. However, in a multi-product industry, an index must be found which permits adding output of a group of products expressed in units of pounds, yards, cases, dozens, etc. The index must also eliminate the effect of price level changes. If the index does not reflect this, it becomes necessary to use a supplementary index, such as the consumer price index of the Bureau of Labor Statistics. One index of output which fulfills the foregoing requirements is "fixed standard costs." An application of this index to the measurement of output is part of the application of productivity measurement exemplified in the latter portion of this paper.

Input refers to the expenditure of resources required for production. In many industries, labor is the most important factor in production. However, other resources which are also very costly should be considered as factors of production, viz., capital invested in machinery, buildings and inventories, materials used, etc. It is interesting to note that the Wage Stabilization Board mentions improved managerial techniques and technological advances. Any index used to compute input, therefore, should permit combining the various resources which are to be measured. It is a difficult problem to put these on a consumer basis. The purpose for which the figures are to be used obviously has a bearing on this decision. One index which meets these requirements uses the manpower equivalent described by the British Institute of Management.

Composition of the Manpower Equivalent of Input

The concept of manpower equivalent is explained by Sir Ewart Smith (Director of Imperial Chemical Industries, Ltd.) as representing the invisible men who stand behind the visible personnel in any manufacturing unit and embodied in capital required per worker. As technological improvements are made in line with this invisible manpower, volume of production increases productivity per labor hour also increases.

Manpower equivalent expresses various factors of input as hours. If, for example, an expenditure of $4,000 for labor represents 2,000 hours at an average rate of $2 per hour, an expenditure of $4,000 for depreciation on machinery is assumed to be equal to 2,000 hours paid for by the payroll department. Another factor of importance is the repair and maintenance expenditure to keep the machine in working order. In this case, too, it is assumed that an amount of, say, $200 per year is the equivalent of 100 hours at the average rate of $2 per hour. The total manpower and manpower equivalent—most simply identified by the latter term—at this point is as follows:

Payroll hours	2,000
Equivalent man-hours of depreciation	2,000
Equivalent man-hours of repairs and maintenance	100
Total manpower equivalent	4,100 hours

This represents the composite factor of input. Attention should be called to several possible objections to the manpower equivalent, i.e.:

1. A total of all payroll hours fails to recognize shifts of skill and related rates of pay. Example: A hand operator at, say $1 per hour vs. a set-up man at $2 per hour.
2. Manpower equivalent of depreciation is only as accurate as the estimated life of the asset. The man-power equivalent formula has been adopted for lack of a better one. The effect on product cost and the profit and loss accounts seems to be reflected fairly well.

The Productivity Formula

The formula used to measure productivity is the known one of dividing output by input and may be expressed as follows, using the manpower equivalent basis of input measurement:

The volume of output divided by the sum of: Total payroll hours charged to manufacturing.
Manpower equivalent of depreciation.
Manpower equivalent of repairs and maintenance.

APPLICATION OF PRODUCTIVITY MEASUREMENT

In order to elaborate upon the theory expressed in the preceding paragraphs, a detailed description of the various calculations made by the company with

which the writer is associated, in a test application of the theory which has been described, is given on the pages that follow. The figures used in the various exhibits are hypothetical.

Calculation of Output

After deciding to make an attempt to measure productivity, a critical examination was made of all basic information available to us. Standard costs were chosen for evaluating production because:

1. Unit cost for each product was available.
2. Physical volume of production was available.
3. Wage and salary payroll hours would tie in.
4. Comparatively quick service could be given.
5. Statistics at our Chicago plant were kept on the same basis.

It was decided to compute this physical volume of output through the use of the January 1, 1950 standard costs as an index. All production, past and

Conversion of Depreciation of Machinery and Equipment Into Equivalent Hours Based upon Average Wage Payroll Rates

YEAR	TOTAL DEPRECIATION OF EQUIPMENT IN USE	DIVIDED BY AVERAGE HOURLY RATE	EQUIVALENT HOURS
1947	$330,000	$1.10	300,000
1948	390,000	1.20	350,000
1949	455,000	1.30	400,000
1950	525,000	1.40	450,000

Computation of equivalent hours (as above) for years after 1947:

1948	$390,000					
Less	330,000	$60,000 ÷ 1.20	=	50,000	+	300,000 = 350,000
1949	$455,000					
Less	390,000	$65,000 ÷ 1.30	=	50,000	+	350,000 = 400,000
1950	$525,000					
Less	455,000	$70,000 ÷ 1.40	=	50,000	+	400,000 = 450,000

EXHIBIT 2

future, would be evaluated by using this standard cost and the result would be considered output. The standard costs as of January 1, 1950 were key punched and set up by out tabulating department in a master deck of cards. The individual mill cost accountants have the responsibility to make corrections for major fluctuations in product design. Also, as new products are added, they

must be costed on the basis of January 1, 1950 standards. (Physical volume of output, calculated in the manner just described, is shown as production volume on Exhibit 5 to which reference is made later.)

It may be pointed out that, if the productivity of several centralized mills is being measured in total, the only production which should be evaluated is finished goods. Material partially processed in one mill and then transferred to another mill to become a component of another product is eliminated from the calculation. However, if the measurement of productivity is applied to individual mills then all production in that mill must be evaluated, whether finished or partially processed.

Conversion of Repairs and Maintenance of Equipment Into Equivalent Hours Based upon Average Wage Payroll Rates

YEAR	ACTUAL REPAIRS & MAINTENANCE EXPENSE	DIVIDED BY AVERAGE HOURLY RATE	EQUIVALENT HOURS
1947	$165,000	$1.10	150,000
1948	192,000	1.20	160,000
1949	227,500	1.30	175,000
1950	280,000	1.40	200,000

EXHIBIT 3

Calculation of Input

In calculation of input our objective was to evaluate the process of mechanization during the past four years. The expenditure of resources we were concerned with may be summarized as:

1. Productive effort of labor—
   - (a) Direct labor
   - (b) Indirect labor
   - (c) Salaried personnel
   - (d) Utilities labor
2. Productive effort of machinery—
   - (a) Productive equipment
   - (b) Service equipment
3. Effort to service machinery—
   - (a) Repairs and maintenance expense
   - (b) Other service labor

Our first attempt to measure productivity was on an individual mill basis. Statistics are still computed and presented by mills. While these ratios are of value, they do not afford complete coverage of input. For one thing, decentralized utility and service departments present less of a problem when an overall measurement takes place. Hence, the following description of the various computations of input factors are on an overall basis covering all manufacturing units.

The first factor computed was total wage and salary hours charged to all manufacturing units, including utility and service departments. Mechanical hours were excluded because they are a part of repairs and maintenance expense. The hours thus arrived at are:

1947	1948	1949	1950
2,050,000	1,841,485	1,753,431	1,826,415

Manpower equivalent of machinery and equipment was determined to be the amount of the annual charge for depreciation divided by the average annual hourly rate of the wage payroll.

Exhibit 2 shows the method used for this computation. Additions after the base year are valued at the current wage rate, whereas the base period equipment is kept constant. This was done to minimize the effect of a changing dollar.

COMPOSITE INDEX OF INPUT
reflecting
Wage and Salary Payroll Hours
Equivalent Hours of Depreciation and Repairs and Maintenance

YEAR	MANUFACTURING WAGE & SALARY HOURS	EQUIVALENT DEPRECIATION HOURS (Exhibit 2)	EQUIVALENT REPAIRS & MAINTENANCE HOURS (Exhibit 3)	COMPOSITE INDEX
1947	2,050,000	300,000	150,000	2,500,000
1948	1,841,485	350,000	160,000	2,351,485
1949	1,753,431	400,000	175,000	2,328,431
1950	1,826,415	450,000	200,000	2,476,415

EXHIBIT 4

Exhibit 3 shows the manpower equivalent of repairs and maintenance. Since the shift from manpower to machine power requires a much greater effort of mechanics, it was considered desirable that this factor be included in the index.

Exhibit 4 represents a summary of the input factors considered for measurement. The composite index represents equivalent man hours.

Productivity Ratios

Having completed the calculations of output and input, we were in a position to make the computations showing productivity ratios. Exhibit 5 illustrates production value per index hour and the ratios to the base period 1947. Pro-

duction and index hours are also shown as percentages in relation to the base year.

An examination of the ratios shown in Exhibit 5 generates a number of questions, among them:

1. How to make calculations of savings?
2. What elements were responsible for the small increases in productivity in 1948 and 1949?
3. While hours of input showed a gain, what was the trend of actual dollar expenditures?

As to the first of the three questions, a savings may be calculated as follows:

1950 Production	$10,500,000	
1947 Production/Index hour	$4.00	= 2,625,000 Index hours
Subtract:		
1950 Index hours		2,476,415
Reduction		148,585 Index hours

Valued on the basis of 1950 average wage rate ($1.40), this reduction in hours amounted to $208,000. However, these savings do not include the high

Ratios Reflecting Production per Index Hour

	1947	1948	1949	1950
Production Volume	$10,000,000	$ 9,500,000	$ 9,500,000	$10,500,000
	100%	95%	95%	105%
Index Hours	2,500,000	2,351,485	2,328,431	2,476,415
(Exhibit 4)	100%	94.1%	93.1%	99.1%
Production Value	$4.00	$4.04	$4.08	$4.24
per Index Hour	100%	101%	102%	106%

EXHIBIT 5

cost of the hidden payroll. We provide for fringe benefits by including the following costs in our burden accounts:

Payroll taxes
Group insurance
Employee accident liability
Pension cost
Vacation and holiday pay

It should be mentioned that the above expenses could be elaborated upon to a considerable extent. A recent list names fifty-three items of hidden payroll.

On the second question propounded, an explanation of the almost unchanged productivity ratios of 101% in 1948 and 102% in 1949 will be found by relating the lower volume of output in those years to payroll hours. Exhibit 6 shows the effect of the constant non-manufacturing hours. It is also important

RELATIONSHIP OF VOLUME AND PAYROLL HOURS
(000 Omitted)

	Production		Mill Hours		Other Hours	
	Amount	%	Hours	%	Hours	%
1947	$10,000	100.0	1,484	100.0	566	100.0
1948	9,500	95.0	1,275	85.9	566	100.0
1949	9,500	95.0	1,183	79.7	570	100.7
1950	10,500	105.0	1,244	83.8	582	102.8

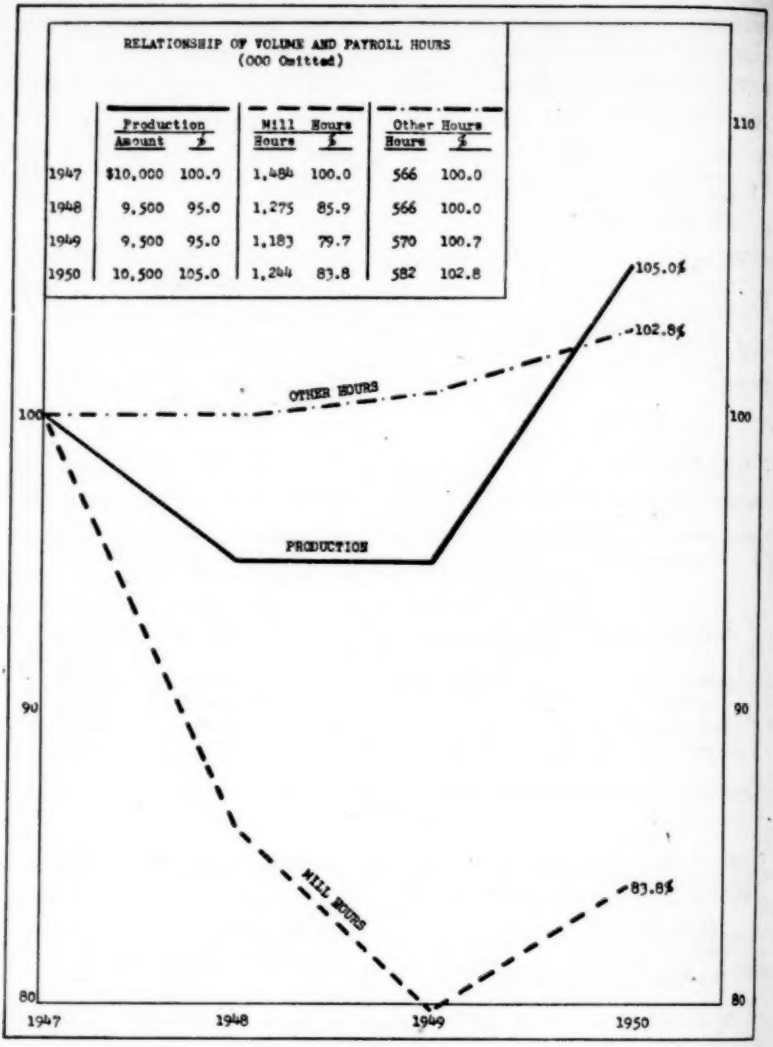

EXHIBIT 6

to note that hours charged directly to the manufacturing mills show an improvement in productivity. In other words, the increase in efficiency due to technological improvements was exactly offset by a decrease in volume.

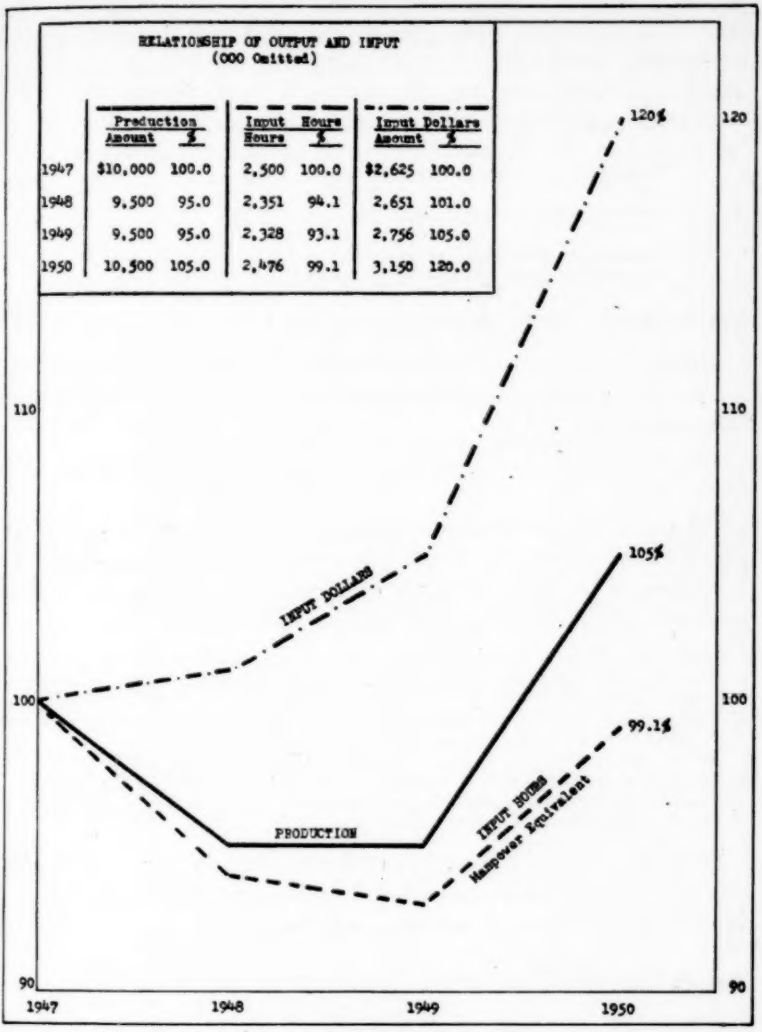

EXHIBIT 7

Exhibit 7 relates to the third question and is an interesting comparison of expenditure of dollars and manpower hours. The production values and the equivalent input hours are identical with the figures shown on Exhibit 5. The

percentages relate to the years 1948, 1949 and 1950 to the base year 1947. The input dollars have been abstracted from the manufacturing expense accounts for the years 1947 to 1950 for the resources used in the input factor. Percentages again relate to the base year.

A further examination of the chart reveals the following:

Increase of productivity (from 99.1 to 103)	6%
Increase of dollars of input (from 100 to 120)	20%
Increase of dollar costs per unit of production (from 105 to 120)	14.3%

Sharing Benefits of Productivity Increases

Just as it is difficult to get a group of interested people to agree on the type of index which should be employed to measure input, so it is difficult to obtain agreement as to

1. Who made the increase in productivity possible?
2. Who should share the benefits of increased productivity?

The most important factors in increasing productivity are generally considered to be increased capital investments and managerial know-how. If the beneficiaries of increased productivity were scheduled on the basis of the aforementioned premise, the listing might appear as follows:

1. Stockholder—if he is expected to continue to provide the means for increased capital investments.
2. Consumer—if expansion of markets is to continue, he should get a better product at a lower price.
3. Management—if incentive is to be provided to men for extraordinary wear and tear to obtain increased productivity.
4. Workers—for providing the skill to operate the technological improvements made possible through increased capital investments and application of managerial know-how.
5. Producers of raw materials, farmers, miners, etc.—through higher prices.
6. Government—through higher taxes.

Under Item 5 above, it might be mentioned that the Department of Agriculture loan and parity formula (cotton is an example) enables the farmer to share in the improvement in industrial productivity.

Conclusion

Before closing, it should be stated that the factors of input used in the example in this article may well prove incomplete as the process is refined. A partial list of additional factors of input, subject to measurement, might include the following:

1. Increased usage of utility services due to mechanization.
2. Capital investment in inventories.
3. Yield of raw materials.

The purpose of this paper has been a description of measurement of productivity based upon the concept of the expenditure of various resources (input) placed on a common basis through manpower equivalent calculations. It is part of the conclusion to be drawn from the illustration given in the article that an improvement in the joint efficiency of the factors of input results in an increase in productivity and that this increase is practicable of useful measurement.

Coming Articles IN THE **N.A.C.A. BULLETIN**, FEBRUARY, 1952

Utilizing Past, Present and Future Costs
by J. G. LARSON

The Accountant's Role in the Annual Report
by J. O. NICKLIS

Techniques for Effective Reporting to Management
by ERNEST A. CARLSON

Weekly Expense Control Can Be Practical
by RICHARD J. HALLORAN

Daily Postings for Fingertip Cost Control
by KENNETH A. BOOS

Cost System for A Vending Machine Route
by HAROLD H. WHITE

THE WORKSHOP

Seven Basic Reports on Productive Operations
by ROBERT F. NELSON

Integrated Scheduling of Procurement and Production
by PETER H. SIMON

A Past Usage System of Inventory Control
by N. T. STEERS

TIME AND STANDARDS

HOW CAN SUFFICIENTLY ACCURATE STANDARDS BE determined? The history of industry, as well as of science, affords adequate proof that only scientific research will give standards which may be regarded as exact. Management needs to establish standards of performance as a means of making sure that the plant and equipment, as operated by labor, yield an attainable low cost of production. Setting up standards of performance serves as a means of measuring the effectiveness of management's control of the performance of men, machines, and tools.

Competition can best be met when costs are known in advance. The aim of efficiency is to make it possible to know costs and conditions beforehand instead of after the work is done. When there is a standard for time, materials, and overhead, it is possible to know costs in advance and to base prices upon such knowledge.

Manufacturers sometimes feel that the cost of time studies in their plants would be excessive in relation to returns. This may be true in some cases, particularly in the smaller plants, but in the larger plants of the country, time study has given large returns—both to the men in the form of higher wages and less fatigue and to the management in the form of lower costs per unit of output.

There can be no doubt as to the value of properly conducted time and motion studies. Much of the guess-work and the hit-or-miss methods of the past have been done away with. Today, the shop is a laboratory wherein is tested the one best way to do the job.

JAMES H. KANE, *Southern Maine*

POINTS

NO MAGNET

WHEN CONSIDERING THE TRAINING of an industrial accountant, some thought should be taken concerning the secondary schools. In the high schools, the commercial courses seem to be the catch-all of the students not qualified for the college or technical courses. We need well-trained clerical workers, but is it not clear that this source does not lead to the type of executive accountant required by industrial firms? We need to attract to the profession college level students. They should be well-grounded in fundamentals from an early start.

The proper training for an industrial accountant seems to require an analysis by business of its needs and constructive action by educators to fill these needs. Perhaps a special degree should be offered by the colleges and the whole course revamped all the way back through the high schools.

HAROLD L. TANDY, *Bangor Chapter*

OLD RELIABLE

THE RELATIVELY SMALL COMPANY (of which there are, of course, many) cannot afford a large office force and cannot afford all the procedures necessary for keeping up-to-date a standard cost accounting system. Nevertheless, it needs cost information as much as do larger companies. By means of an actual cost system it is able to obtain such information. The question of flexibility arises too. The need today is for facts, truths, the vital information for sound management decisions and these facts must be available before they are out-of-date.

F VIEW

The final result of any cost system is actual cost, regardless of whether we get there by taking standard cost plus or minus the variations (some known, some unknown), or whether we just plain add up the actual cost. The following are points to remember when the suitability of a cost system is under discussion:

1. When an actual cost accounting system is used, cost can be traced back to actual expenditures.
2. There are no variances or estimates to contend with.
3. Cost comparisons are available from month to month.
4. Actual cost systems can be used by large and small manufacturers alike.
5. Flexibility of operation is not hampered.
6. Actual costs are thoroughly acceptable to the government.
7. The actual cost system can be used through any situation, war or peace.
8. Actual cost gives fact, not fiction.

DAN HACKNEY, *Charlotte*

A STRING HAS TWO ENDS

ONCE AGAIN the question of accounting for emergency facilities confronts all accountants with respect to the unusual problems arising from the military use of such facilities. Should the entire cost of the asset be written off under the allowed accelerated amortization provisions which have been reinserted in the statutes as an incentive to construct and operate such facilities? The selection of exclusive accounting methods has a direct bearing on present and future cost and consequently will affect prices and profits.

There are two phases of established accounting procedures which should be given some strong constructive thinking in connection with a decision to use accelerated amortization. They are:

1. The cost of a facility is the cost of series of services and products derived from its use, so that such costs should be compared with revenues produced.
2. Operating statements and reports are not technically correct or useful if they reflect an overstatement or understatement of asset value. Future reports of income then become under/or overstated because of allocations of costs already made on a deficient or excessive basis.

There are many more substantial reasons why the accountant should be alert to the significance of the use of accelerated amortization of emergency facilities, especially so if the facility can be easily adapted to uses other than war production. The importance of corporate financial statements can never be overstressed. They influence, not only management, but also the man in the street, as these statements are the chief source of data relating to the position and trend of business units.

The utilization of emergency facilities for other than war work is important to the business and when the omission or reduction of charges for depreciation results in differences in data, the financial statements become unreliable and lose prestige and purpose.

The accountant should determine his company's preferred method and advise to the end that the accounting will be consistent and rational and will improve the comparability of reporting in industries of the same type and among different years. Only then can complete public and managerial confidence be expected of resulting financial statements and reports.

W. E. GUINN, *Fort Worth*

Competence Balance Sheet for the Cost Accountant

by JAMES B. FENNER

Vice-President and Comptroller, Electric Auto-Lite Co., Toledo, Ohio

The stimulating analogy between statement of a man's worth to himself and his fellows and balance sheet presentation of financial facts is here convincingly and entertainly applied to the industrial accountant. Exhibited is a brief pro forma "balance sheet" giving studied point to the parallel. It is followed by more detailed discussion of "balance sheet items."

THERE ARE ALL KINDS OF COST ACCOUNTANTS just as there are all kinds of everything else in the world and it seems to me that it would be well for each of us to stop and analyze his individual, professional characteristics at the close of one year and the start of another, much after the manner in which a company makes at least one financial statement annually to establish its position at a given point of time. The values to which reference is to be made are not money values as such. In place of dollars and cents I would like to direct attention to the factors which enter into the makeup of a cost accountant (or any other accountant) from the angle of building up his efficiency and standing in the business world he serves.

No Progress Without Action

Too many accountants take it for granted that they automatically improve in ability as time goes on, regardless of what effort is made (or not made) to build up better understanding, more intense experience in the particular field, cultivation of friends and associates who are interested in the same business subjects, or whatever else might be desirable to speed up the process of becoming more efficient accountants. This process is, in fact, far from automatic. The main purpose of this paper is to create desire and ambition to improve those factors which mean greater asset value to the individual and to cut down the liability side, so as to build up our personal net worth which—whether measured in competence, reward or both—is the thing which any ambitious American is trying to do in the free enterprise world in which he is fortunate enough to live.

Since one axiom of accounting is to take nothing for granted, the reader will require that I set to work to show how this competence balance sheet for

the individual may be made up in a form to show assets, liabilities and net worth which make up the inner man of the cost accountant. Exhibit 1, Pro Forma Competence Balance Sheet of the Cost Accountant, will start us off for the more detailed exposition of individual items, which constitutes the remainder of this article.

Cash Demand Deposits of Significant Information

To give proper emphasis to each item on the cost accountant's balance sheet, it will be necessary—as with any other financial statement—to go over the individual categories in some particular. Analogous to cash is the accountant's readiness with "negotiable" facts. Just as cash is one of the most important assets in a business, even so an accountant's knowledge of his job. His ability to serve up facts and figures promptly may be regarded as somewhat the same type of valuable asset.

A good many men in cost work content themselves with compiling figures and schedules in a meticulously accurate manner without taking time to properly and promptly interpret the figures to those in a position to take action on financial statements or reports. To become truly proficient in the field of cost accounting, a person must learn to look behind the figures and secure a "physical grasp" of the causes behind a particular financial picture. In other words, if a cost accountant is talking about spoilage and waste in the manufacture of a product, he should not be satisfied to show a figure of so much money for a given period but should also make a study of the situation giving rise to the manufacturing loss. He should cause such further studies to be made as will reveal what can be done to eliminate the waste. The faculty of making or stimulating such studies is one which the average man can attain with reasonable care and effort.

Receivables: The Potential of Experience

The ready flow of competence to serve in the way which has been described above is achieved by putting more into daily work experience than is taken out. That is how to build up receivables in life. It can be accomplished by trying, every day, to know more about the business, how the product is made, how the costs are accumulated, and everything having a bearing on the operating results.

Under the same heading, the art of making up the right kind of schedules so as to offer convincing evidence as to what the books reveal is something

Pro Forma Balance Sheet for the Cost Accountant

ASSETS

CASH IN BANK OR ON HAND

Compares with technical as well as practical knowledge of the job and ability to serve up facts and figures fast and accurately from day to day.

RECEIVABLES

Continuous activity in developing new and better ways of handling the job with the aim in mind of cashing in on these business attributes in the immediate future. The requirements include good habits and traits of initiative, courage and high integrity.

INVENTORY

Various cost-finding activities in different stages of future development, such as new and better ways of presenting budgets or other managerial reports. It includes expenses of self-help, such as tuition and study at evening classes in school or attending sessions of N. A. C. A. or other technical societies devoted to promoting greater skills in cost technique. The most important value, perhaps, is that of studying to learn more and more about the particular problems of a given company as time goes on.

INVESTMENTS IN OTHER ASSETS

Education, family life, friends and all the various social contacts which help a man grow and develop in a healthy atmosphere of business advancement.

FIXED ASSETS

Measures the opportunities for advancement and greater expression in the chosen place of employment. An aggressive cost accountant should invest his time and talents with the type and size of employer best suited to give him a chance for executing, to the fullest extent, the accounting talents which, as a cost accountant, he possesses or hopes to attain later.

LIABILITIES

CURRENT TRADE OBLIGATIONS

These may be likened to the job requirements for speed, accuracy and completeness in earning one's salary by delivering the goods now—not at some future date.

LONG-TERM DEBT

Every cost accountant in a free enterprise country like ours has an obligation to pay off over the years in guiding the business decisions to a sound and profitable conclusion, thus justifying the confidence and faith placed in him by his employer and by the business world in general.

NET WORTH

This measures the sum total of individual growth financially and otherwise as the years go by. It is not a static position. A worth-while cost accountant progresses over the years (from the profit motive) and in the hope of obtaining a better position (the inevitable reward to those who make good).

EXHIBIT 1

which accounting schools at the college level seem to be giving more attention to in these times. Training is a component of the account receivable item on a cost accountant's balance sheet. This training is converted into cash as accounting facts are portrayed from day to day in such a way as to convince the management served that accountants of an intelligent and aggressive type are indispensible staff. One good cost fact served up to management promptly and persuasively may be worth hundreds or even thousands of dollars to the business. By the same token, neglect or failure may cause heavy losses.

There has been some significant experimentation with practical accounting training on this "receivable" level. One university has wisely incorporated a system of short, boiled-down lectures series of four to six weeks each on various accounting subjects such as costs, budgeting, insurance, etc., so as to bring out from the managerial viewpoint the highlights of what is to be done in the way of presenting accounting knowledge to the people who run the business. This appears to be a step in the right direction in the way of creating a new approach to the problem of making the accountant more valuable to the business he serves. Anyone who reviews the development of accounting over the past fifteen or twenty years can see very definite improvement in the development of ways and means to interpret the accounts. A lot more has to be done, however, and every industrial accountant, in whatever position, should strive to work out better ways and means of keeping the records and the detail work presenting the essential data.

In this matter, the use of time is all-important. If industrial accountants at all levels spent as much time each day learning about their jobs as in reading the funny papers, studying the box scores of the baseball teams or masterminding favorite movie or television stars, they would have a lot more values on their balance sheets in the way of receivables. In short, a cost accountant's receivable total means the investment of the necessary time (including attenddance at accounting meetings) to stimulate thought on how to do a better job in the way of interpretative accounting. Careful analysis of daily routine should show that each day something is added to the sum total receivables, the benefits of which can be cashed in on the job as the years go by.

Inventory: Continuing Education and Training

However, it must be remembered that a cost accountant's receivables can be created only out of sound inventories of still more fundamental cost knowledge and experience, just as in their counterpart—the financial balance sheet—receivables rise and inventories are moved out or sold to the customer.

Building up inventories includes plans or prospects for improving ability to

do the accounting job. This may mean going to night school or taking correspondence courses, whichever better serves the purpose. In any event, it means that each industrial accountant until ready to retire (whether at sixty-five or seventy-five) should be thinking in terms of developing better understanding of, not only the current needs of his position, but what he will be called upon to do later on.

Attention must be fixed on the enlarged opportunities which modern American business offers in the process of time to all who are willing to pay the price of hard work and money to fit themselves for higher positions. Cost accountants should think in terms of building up their current asset position so as to take advantage of the opportunities existing in this complex business age for men who really understand the subject of costs and its related factors.

Accounting is not a static profession but something constantly changing, even though we may not always be aware of the forward motion going on all around us. It is a short-sighted and probably a dangerous procedure for any cost man to take the stand that he has reached the acme of professional excellence at any given stage of his life. New and better ways of doing accounting work are constantly calling for attention. There is no safety in standing still.

A Group of "Other Assets"

A cost accountant worthy of the name is more than a human figuring machine or "figure man", as some people put the term. Under the caption of investments, let us list a few things apart from the actual work of accounting which, nevertheless, contribute to a man's success in doing the right kind of job.

The first thing to consider is education. We have made some mention of specific training but education does not stop with formal study in secondary school, college or other seat of higher learning. It comprises many things besides accounting which are vital to doing an all-around job, such as mastery of English, both oral and written. Many a good cost man fails to cash in on his ability because he fails to express his thoughts or construct schedules in a clear-cut, understandable manner. Accounting requires some sales ability, also. Top or operating management personnel often have to be sold on the existence of a given financial situation. This calls for special exhibits, charts, written reports and lots of other tricks of the trade to get the story across. I think it is safe to say no man ever invests too much in education of the right sort.

Experience, likewise, is involved in the matter of other assets. Cost accounting is so diversified in its application that no man can hope to get very far up the ladder unless he is willing to take time for the investment of his talents in

actual work over a period of years, something which we term experience. No school can take the place of sound business experience. If the present job offers no chance for improving skill through experience of the right kind, this is a danger sign. On the other hand, if worthwhile experience is being provided, it is not fanciful to add its value to the pay check when comparing salaries. When I get to the point in life where experience on the job is failing to teach me something new or better, I will be ready to step out and call this life finished.

The training of others on the job is the source of still another asset—competent assistance—and is a spiritual asset often overlooked at great loss to the individual accountant. If overlooked, the loss is great in many ways. Where would any of us be today if somebody had not taken time out along life's pathway to show us how to do our work properly? This matter of training others is not only sound business practice from the employer's angle, but also from that of a selfish desire to advance. More than one cost accountant has been left in a lower position because the management was afraid to move him to a higher position as long as there was no one competent to take over the present job. Never lose sight of this asset. Time given to those in subordinate posts paves the way to better things. If there ever was a definite place for the Golden Rule, this is it. Besides, it gives a man real pleasure, as he goes through life, to be able to look around and see men in high positions whom he has helped to promote. There is no more precious investment.

The Company Is the Fixed Asset

The industrial accountant should look on his employer as a person or organization fit for the exercise of his best efforts over a period of years, not for just today and tomorrow. A short-sighted view of one's place of employment can be very costly over the years.

A good thing to do is to look up the ladder and to see what happened to other cost accountants over the years. In Auto-Lite several plant managers have risen through accounting channels. Indeed, what training could be better? These men know what make up the costs of production by virtue of their years of training in keeping after the budgetary controls and other factors. They also invested their time and talents in mastering those other traits previously referred to as necessary to round out a fully developed accountant. And they were not afraid to work long hours to accomplish their goal.

The Liabilities Too

A good accountant acknowledges a current liability. He always remembers that for his salary a good day's work is due the employer. He does not see how

little he can do in eight hours but, rather, seeks to think and plan while off the job (and at no overtime pay) for doing more and better work. This may sound old-fashioned and something which passed away under the terms of modern business but I, for one, deny it. There is no substitute for hard work. A sound individual is conscious of his liability for salary received and, as it works out, his employer will more than likely keep his eye on such a person and pay for services in just amount as time goes on.

There is also long-term debt. Stop and think a minute! Where would we be were it not for the foresight and vision of those who created vast business enterprises which gave rise to need for accountants? There is a responsibility to help preserve these free enterprise institutions. The government which we live under is another long-term debt which we will be under obligation to preserve all our lives. Cost accounting, in these days of OPS, CMP and other vital controls on the economy, plays a mighty important role. In labor relations, also, the negotiators must know costs. How can business continue to raise wages and grant other benefits unless it profitably employs the assets under business control?

The Industrial Accountant's Net Worth

What is the accountant's market value? When he asks himself this question, he must remember it means more than financial figures. A baby at birth is supposed to be worth $30,000 (according to an insurance appraisal I once read), yet the life of a worker under compensation laws may be valued as low as $10,000. Many wealthy men are worth many times these figures. Somewhere along the line each one of us fits into the picture, but the dollar value is not everything. In the sum total of our accomplishments over the years, life is likely to make peculiar appraisals from a monetary angle but, if we maintain a right concept of such values as I have tried to present here, we shall enjoy the satisfaction of living to the fullest extent.

For Higher Values

This discussion is limited in space and scope, but the matter is of long-range importance. It relates to the individual and, in American life, may it always be true that the individual sparks progress to the benefit of himself and others. Higher values in all categories are essential to the complicated economic conditions under which we live today and which are likely to continue for many years to come.

The Case for Profit Sharing

by SARTELL PRENTICE, JR.

Field Secretary, Northeastern Regional Chapter, Council of Profit Sharing Industries, New York, N.Y.

Strongly recommended in this article, as capitalism's best proof of economic good faith, are profit sharing plans which are in themselves profitable to the company and its employees alike. Some indications are given of the principles underlying successful profit sharing.

ANY BUSINESSMAN WOULD BE DELIGHTED to spend more money if by doing so he could reduce his costs. To this end, American business spends large sums each year for labor-saving machinery in order to reduce the unit costs of production. Many businessmen have also found that they can reduce their costs through sharing their profits with their employees and thereby making them partners in the enterprise.

Let us briefly size up the usual elements of cost. Over the cost of materials the businessman has no direct control, for these are purchased from outside suppliers. All he can do is select the source from which he obtains these materials. Nor does he have much direct control over the fixed charges in his overhead—rent, depreciation, insurance. These items are set, regardless of what the businssman may do. His control over his selling price is limited by the forces of competition. There remains one variable, i.e., the cost of labor, including those other costs which are under the control of the employees. The president of one company in a highly competitive field told me, "If I could reduce my labor cost by five per cent, my company's net profit would be increased by two hundred per cent."

Some Results of Profit Sharing

It is to labor and closely-related costs that profit sharing addresses itself as a very practical matter. My organization has become a clearing house for experiences in profit sharing—and its absence. For example, time after time, I am told, "We pay top wages, we provide pensions and insurance. We do everything we can for our employees, yet we are lucky if we get six hours work a day out of them." I am constantly hearing of the appalling waste in industry, of enormous quantities of finished products which have to be scrapped because of lack of interest and carelessness, of $1,000. a month water bills which should be only $500. etc., etc. An envelope manufacturer with a net profit of $140,000

estimated that $40,000 had been lost in waste paper due to faulty adjustment of machinery. Two years after installing a generous profit sharing plan, this company reported that the waste from this source had been reduced to less than $5,000.

The improvement indicated has its counterpart in many stories told by members of the Council of Profit Sharing Industries. One company reports a reduction of fifty per cent in the cost of water and light, sixty-two per cent in the cost of fuel, and fifty per cent in the waste of the raw material used in production. The company is one in which raw material represents eighty per cent of the total manufacturing cost. In a company manufacturing truck bodies, after a loss year caused by a steel strike, the employees found a way to turn out twenty-four trucks in the same time they had previously produced eighteen, using the same equipment. A retail store similarly showed a marked reduction in the volume of merchandise which had to be sold at bargain prices.

The rewards of profit sharing are not in reduced cost alone. Enhanced employee loyalty creates a stable and responsible employment situation. A company with a profit sharing plan, servicing the highly volatile machine tool industry, had no profits to share in 1949 and had to come down to a thirty-two hour week. It could not provide the employees with a living wage. Yet they were so anxious to remain with the company that they worked spare time in super markets, filling stations, etc. The company lost only five employees that year through death, retirement, and for all other reasons combined. Another company has been able to eliminate inspection entirely. At each stage in the production process, the employees on direct labor have satisfactorily assumed full responsibility for the quality of the work.

Nor are reduced costs and better work all which can be mentioned. Finer citizenship and a greater sense of social responsibility is apparent among the employees of companies with successful profit sharing plans. A few years ago the employees of one company contributed an average of $75 apiece to the local hospital fund. Goodwill accrues to both the individual and the company from such actions.

A Comparison and A Distinction

If I own an automobile, I can drive it for a long time if I just keep gasoline in the tank, oil in the engine and have the chassis lubricated from time to time. Perhaps, when I first buy the car, I will get twenty miles to the gallon. It will not be long, however, before my mileage starts to drop to eighteen, fifteen, ten miles per gallon. Although the car will still run, other operating

costs will start to rise too. Eventually the car will either break down entirely or be a menace on the highway.

On the other hand, if I really take care of that car, keep it always properly tuned and free of carbon, the wheels properly aligned, the oil and air filter clean, etc., it will give me years of economical service. On my 1947 car, my original tires lasted for fifty thousand miles and still had plenty of tread when I replaced them. It still delivers twenty miles per gallon on the open road.

With a car, the owner himself has full control over the kind of care it will receive. In a business organization, on the other hand, the situation is different. The employees have the immediate control over elements of cost whether there are ten people or 100,000 or more. The spirit of enthusiasm, interest and co-operative effort—or the lack thereof—which they put into their work in the aggregate will determine whether or not the organization, like the car, functions efficiently, economically and profitably. Furthermore, it is a lot easier to replace a car than it is to rebuild a business organization.

Two Opinions in Point

This is to say that the development of a sound and successful employee relations program, designed to give each employee a feeling of partnership and participation in the enterprise, offers perhaps the greatest opportunity for further cost reduction. Its still higher significance has been phrased in the following manner by James F. Lincoln, President of the Lincoln Electric Company and a Trustee of the Council.

> "We (as a nation) are sitting in the driver's seat at the present time for one reason only: We can produce more economically than any other nation in the world. If that disappears, we disappear with it. It is disappearing pretty rapidly. There is only one way that I know of that this advance in cooperation and increase in productivity is going to be possible, and that is by some system wherein all desire and want to work together for a common end. *No other scheme has ever been suggested which has any evidence of success aside from some plan which, through profit sharing, grants workers freedom of opportunity to participate in the rewards of their cooperation with capital and management.*"

Profit sharing is no panacea. It is merely a tool—cornerstone in a program of employee relations designed to give each employee a sense of dignity as a human being, a feeling of membership on the competitive team. Without profit sharing, whatever else a company may do, it is, in effect, telling its employees that, no matter how much they may contribute toward increasing the company's profits, the increase in its entirety is going to the stockholders.

Moreover, by making employees partners through profit sharing, a company

is laying the foundations of trust and mutual interest on which to build a program of education. As Walter H. Wheeler, Jr., President of Pitney-Bowes, Inc., and first Vice Chairman of the Council, has put it:

> "Without profit sharing, it is an almost insuperable task to educate the great mass of people on the economic facts of life—all to defend what must appear to be the special privileges of the few."

What Underlies Successful Profit Sharing?

Perhaps the greatest single cause of past failures in profit sharing stemmed from the fact that companies adopted profit sharing plans without any understanding of what was required to gain the benefits claimed by successful profit sharers, and with no experience on which they could draw. Since the establishment of the Council of Profit Sharing Industries in 1947, however, any company interested in profit sharing can benefit from the experiences of hundreds of companies, ranging in size from three employees to 100,000, in all types of industries, and thereby gain the knowledge necessary for success.

The Council defines profit sharing as "Any procedure under which an employer pays to all employees, in addition to good rates of regular pay, special current or deferred sums, based not only on individual or group performance, but on the prosperity of the business as a whole."

The spirit behind the plan is more important than any of the technical details. As Mr. Lincoln puts it, "The details of the plan don't matter. The question is—do the people in the organization from top to bottom want to make the plan succeed? If they do, you can't stop them. If they do not, I don't care what the plan is, it won't do much good."

From the experience of the Council's members, a few of the principles underlying successful profit sharing may be summarized briefly as follows:

1. There must be a compelling desire on the part of management to install the plan in order to enhance the team spirit of the organization. If there is a union, the union's cooperation is essential. It is probably fatal to install a plan in order to weaken the union's position or to prevent the organization of a union. (Management should recognize their employees' right to organize if they so desire; on the other hand, it is certainly not up to management to force a union on their employees if they do not want one.)
2. The plan should be generous enough to give the employees a real feeling of partnership, and to forestall any feeling on the part of the employees that the lion's share of the results of extra effort will go to management and stockholders.
3. The employees must understand that there is no benevolence involved—that they are merely receiving their fair share of the profits they have helped create —of profits that in all likelihood would not have been earned without profit sharing.
4. The emphasis should be placed on partnership, and not on the amount of money involved. If the emphasis is placed on financial return, it will be

more difficult to retain the employees' loyalty and interest in loss years. Many of the Council's members report that loss periods have stimulated rather than decreased the team spirit of the organization.

5. The employees must be made to feel that it is their plan, as well as management's, and not something that is being done for them by management. The employees should be well-represented on any committee set up to administer the plan.

6. Profit sharing is inconsistent with arbitrary management—it functions best in companies operating under a democratic system. This does not mean that management relinquishes its right and, in fact, its obligation, to manage, but rather that management functions by leadership instead of arbitrary command. The employees know whether their company is capably managed or not and profit sharing offers a challenge to the best management.

7. Under no circumstances can profit sharing be used as an excuse for paying lower than prevailing wages.

8. Whatever the technical details of the plan, the plan must be well-adapted to the particular situation, and should be simple enough so that all can readily understand it.

9. The plan should be "dynamic", both as to its technical details and as to its administration. Both management and employees—and in profit sharing companies it is often difficult to find the demarcation line—should give constant thought to ways of improving the plan.

10. Management should recognize the fact that profit sharing is no panacea. No policy or plan in the industrial relations field can succeed unless it is well adapted and unless it has behind it the sincere desire of management to be fair and evidences the faith of management in the importance, dignity and response of the human individual.

In summation, the best guide to successful profit sharing, as to all aspects of human relations, can be found in the Sermon on the Mount, enunciated two thousand years ago.

The Stakes

The workers have enough votes largely to determine the kind of economy this country is going to have and into which our children are going to grow. They are the ones who are going to determine whether or not there will be an unbroken trend to socialism. American business is challenged as never before to create an environment in which each individual is encouraged, not to seek security at the expense of the taxpayer, but rather to develop his own God-given talents to the utmost.

Profit sharing is an adventure in faith in human beings, and when you have that faith and you demonstrate it in your dealings with men and women, you will find that they respond. Profit sharing and cost reduction go hand in hand.

Another Look at the Natural Business Year

by R. CARSON COX

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The natural business year is an attractive concept to management and accounting personnel in many companies now on a calendar year closing basis. The present article reviews the history of this concept as a movement, describes some of the advantages of the natural business year, and presents selected responses to a survey in which the author solicited opinions in companies representative of a variety of industries.

THE NATURAL BUSINESS YEAR, a subject of constantly growing interest among accountants and business executives, is hailed by its proponents as one of the most valuable concepts available to business in the interest of economy and efficiency of operation. There are many others who do not favor this concept or, if they do, feel that for one reason or another it is not suitable for their particular business.

The natural business year for any particular enterprise has been defined as:

> "The period of twelve consecutive months which coincides with the annual cycle of operations. Generally, the natural business year will end when the business activities of the enterprise are at the lowest point in their annual cycle and when inventories, receivables and liabilities are reduced to their annual minimum. The natural year-end occurs just before the beginning of heavy inventory replenishment in preparation for a new season." R. S. Jones—*The New York Certified Public Accountant*, July, 1938.

The history of corporation closing dates is not clearly marked out. The logic of closing at an annual point at which a lull in activity lends itself to the task and the financial statements contain fewer estimates, has long been recognized and followed to some extent. On the other side of the picture, the corporation excise tax of 1909 required reporting on a calendar year basis and doubtless influenced many companies in a permanent way, despite the privilege of fiscal years, accorded by the Revenue Act of 1913. The weight of governmental reporting requirements has, in general, been on the side of calendar year accounting.

In 1926, a survey undertaken by the Bureau of Business Research of the University of Illinois, covering 439 companies, disclosed that 72 per cent used calendar year closings as against 44 per cent which would continue to do so if natural business year closings were standing practice. In 1935 the Natural Business Year Council was founded, with the support of a number of other

organizations, to conduct research in the determination of natural business years and to encourage their adoption.

Adoption of the natural business year received further impetus in 1939 through testimony of expert witnesses at the Securities and Exchange Commission's hearings in the matter of McKesson and Robbins. The witnesses were in full agreement on the advantages of a general adoption of the natural business year. In 1940, SEC Accounting Series Release No. 17 on the subject of the natural business year, indicated not only that the commission had no objections to a change-over to a natural business year, but pointed out definite advantages which would accrue to a corporation and explained the steps necessary.

What Are the Advantages of the Natural Business Year?

Mobilization with the problems which it creates for all industries, shortages of essential materials and man-power, higher taxes, narrower profit margins—all these factors place a high premium upon efficiency. Time is of the essence. Maximum production is the order of the day. Every executive doing his best to help in the mobilization effort, whether he is primarily concerned with supplying the needs of the armed forces or meeting the requirements of the civilian population, is now constantly confronted with questions relating to increased output, reduced waste, and a reasonable margin of profit under conditions which make it difficult to obtain. Adoption of the natural business year, say its proponents, is one of the answers to these questions.

The advantages of the natural business year are represented as lying in the facilitation of operations essential to the proper conduct of a business. For example, financial statements prepared at the end of the natural business year more accurately reflect the facts of the business, in part because inventories and receivables—usually among the most important items in the balance sheet—are lowest then and the estimate factor in their valuation is of least consequence. Moreover, the inventory picture is clearer for income statement purposes as well as for the balance sheet. Inventory has been sold and the proceeds have not yet been re-invested in new inventory. At a later date, complex problems of inventory valuation must be solved to calculate profit. Again, tax liability can be computed most accurately at the end of the natural business year.

Adoption of the natural business year can make physical inventory-taking a less difficult matter. Stocks are relatively small and inactive and can be checked and tabulated more quickly. There is a minimum of interference with productive activities, because normal operations have temporarily declined at the end

of the natural business year. Regular employees, relieved to some extent of their customary responsibilities, are available to assist in inventory-taking.

It is similar in the area of planning and control. New policies are usually introduced at the beginning of the natural business year. Financial statements prepared at the end of such a period, because they reflect the results of these policies over one complete cycle of operations, provide management with a check on their effectiveness.

Another advantage to management of the adoption of the natural business year lies in the fact that a balance sheet prepared at this date for credit purposes shows the concern in its most liquid and, therefore, most favorable position. A statement of financial condition prepared at this date will indicate clearly the ability of the concern to liquidate its bank loans at least annually. The pressure for "window dressing" will be diminished considerably as compared with a closing date at any unnatural time of the year.

Looking at it from still another viewpoint, wide adoption by industrial companies of fiscal years has definite advantages for bankers, particularly credit bankers. Statements coming to the attention of credit departments would have more uniform distribution throughout the year, thus permitting more prompt, careful analysis of such statements. The custom of closing books at December 31 puts a seasonal burden not only upon bankers but upon the Bureau of Internal Revenue as well.

Identification of the Natural Business Year

Because the natural business year of an enterprise closes at the end of the month in which its activities are at or near their annual minimum, an important step in adopting the natural business year is to determine this month. Exhibit 1 shows recommended years for sixty industries.

The following material embodies the substance of examples provided by the Natural Business Year Council pamphlets as related to three major industries. It shows how these lines of business have determined natural fiscal closing dates for their organizations.

Meat Packers—Sales of meat and, consequently, packers' receivables, are relatively stable throughout the year. Production of pork and pork products is usually the largest fraction of the output. Inventories of pork in cold storage normally reach their peak in the late spring and decline to an annual minimum in October or November. Liabilities are usually lowest in September or October. The largest packing houses, estimated to represent more than three-fourths of the total production for the industry, close their books either on October 31 or on the last Saturday in October.

NATURAL BUSINESS YEARS FOR 60 INDUSTRIES

INDUSTRY	RECOMMENDED CLOSING DATE
Agricultural Implements—Manufacturing	Sept.
Automobile Manufacturing	Sept.
Automotive Accessories—Manufacturing	July-Aug.
Aviation Transportation	April
Bakeries	June
Beverages, non-alcoholic—Manufacturing	Sept.
Books, Publishing	Jan.
Bricks & Clay Products—Manufacturing	March
Candy—Manufacturing	June
Cement—Manufacturing	Jan.
Coal Mining	March
Containers, Paper—Manufacturing	April
Copper Products—Manufacturing	June
Dairy & Produce Companies	Feb.-Mar.
Department Stores	Jan.
Drugs, Retail	Jan.
Drugs, Wholesale	June
Fertilizers—Manufacturing	June
Fisheries	April
Foundries & Machine Shops	Jan.
Fruit & Vegetable Canners	Feb.-April
Furniture—Manufacturing	Dec.-Nov.
Furniture—Retail	June
Gasoline Refining	Oct.
Glass—Manufacturing	June
Grain—Mills & Elevators	May-June
Groceries, Retail	June
Groceries, Wholesale	June
Hardware, Manufacturing	June
Laundries	June
Leather—Manufacturing	Oct.
Lumber Products—Manufacturing	Oct.
Mail Order Houses	Jan.
Meat Packing	Oct.
Motion Pictures—Production	Aug.
Motors, Drills, etc., Electrical—Manufacturing	Sept.
Newspapers	Aug.
Office Equipment—Manufacturing	June
Oil—Production	June
Paints, Varnish, Lacquer—Manufacturing	Nov.-Dec.
Paper—Manufacturing	July
Printing Equipment—Manufacturing	Aug.
Radio—Manufacturing	March
Railroad Equipment—Manufacturing	March
Restaurants	June
Rubber Goods & Tires—Manufacturing	Oct.
Rugs & Carpets—Manufacturing	June
Shipbuilding	June
Ship Lines	Sept.
Shoe—Manufacturing	Nov.-Oct.
Silk & Rayon—Manufacturing	May
Soap—Manufacturing	June
Steel & Iron Products—Manufacturing	June
Sugar, Beet—Manufacturing	June
Sugar, Cane—Refining	Dec.
Textiles, Cotton—Manufacturing	Sept.-Aug.
Tobacco—Manufacturing	Feb.
Warehouses, Cold Storage	March
Wire & Fencing—Manufacturing	June
Woolens—Manufacturing	Oct.-Nov.

EXHIBIT 1

Department Stores—The annual sales peak occurrs in December, reflecting purchases of holiday gifts. Inventories decline to a minimum in January, following the Christmas rush and subsequent clearance sales which reduce or eliminate broken stocks. Current liabilities are relatively low, as obligations incurred in accumulating pre-holiday merchandise have been liquidated.

It would obviously be undesirable for a department store to conclude its fiscal year on December 31, because of relatively large stocks, expanded receivables and liabilities at that date. Moreover, the entire staff is too busy to devote the necessary attention to activities incidental to taking inventories and closing the books. Most department stores complete their fiscal year on January 31.

Farm Equipment Manufacturers—Sales, which reach a peak in the spring, normally decline to their annual minimum in late summer or early fall. Receivables lag about a month behind sales. Inventories are lowest in the fall, before stocks are replenished for the coming production season.

More than twenty-five per cent of the farm equipment manufacturers, including the larger concerns in the industry, have adopted a natural business year ending on October 31.

1948 vs 1929

Has there been progress in promotion of the natural business year? A recent study in this field by William Slocum when a graduate student at Ohio State, involved sixty industrial classifications chosen from Moody's Industrials. The closing dates of 1102 companies were tabulated for the year 1929 and 1948 and matched with natural business years recommended for each of these industries. A summary of this information appears in Exhibit 2, without industry data. In 1929 a total of 810 companies (73.5 per cent) closed their books on December 31. The remaining 292 companies had closings scattered over the other eleven months, with a peak of 56 companies (5.1 per cent) closing in June.

By 1948, the number of companies using December 31 to close on was reduced from 810 to 674 (61.1 per cent). The 136 companies making a change from the calendar year caused an increase in the number of fiscal year closings in every month but February. June and October show the largest increases, with June now reporting 87 closings (7.9 per cent) and October showing 65 closings (5.9 per cent.)

This could be taken to suggest that the Natural Business Year Council has had some success in its efforts to secure adoption of the natural business year. However, for this to be true on these facts, many of the companies abandoning the calendar year must have done so in favor of their natural business years. A more detailed analysis of the information than is shown in Exhibit 2 indicates that all the changes made were not made in favor of the recommended natural business years. The total number of companies using the suggested fiscal closing date in 1929 was determined and it was found that 142 (12.9 per cent) selected this date. In 1948, this number had increased to 200 (18.1 per cent). This means that the study data shows that 58 more companies of the sample are using their natural fiscal year now than in 1929. Further count of companies using a fiscal period within one month of the recommended date (e.g. February, March and April if March is the recommended date) showed that 277 companies (25 per cent) fell within this group in 1929, while 337 (30.6 per cent) were in this group in 1948.

Some Opinions from Industry

Still more recently in an effort to get added information as to why the natural business year is not acceptable to a larger portion of industry. I addressed letters to sixty controllers whose companies come within a reasonable approach of being representative of each of the sixty classifications included in Mr. Slocum's study. In doing so, I asked for opinions as to whether or not the closing of the books at the end of the natural business year was advisable in the industry with which each company is associated.

COMPARISON OF CLOSING DATES
1949 vs. 1929 for 1102 Companies

	1929	1948	INCREASE (DECREASE)		1929	1948	INCREASE (DECREASE)
January	28	32	4	July	9	23	14
February	19	19	—	August	22	35	13
March	30	34	4	September	33	44	11
April	14	26	12	October	38	65	27
May	17	21	4	November	26	42	16
June	56	87	31	December	810	674	(136)
				Total—All Months	1102	1102	—

EXHIBIT 2

The answers may be summarized as follows:

In favor of the natural business year and are of the opinion that they now close their books at that time	8
Diversified business—no natural year-end for all divisions	7
Very little if any seasonal fluctuation in their business	10
Confused with 13 period calendar	1
Did not understand the meaning of the natural business year	1
Preparation of tax returns	3
No one month more favorable than another—therefore use December 31	3
Calendar year is the natural year-end	4
	37

Typical answers are as follows and may shed some light on practical considerations which affect decisions in this area:

Company A—Our company consists of several businesses, some closely related and others not so closely related, which have varying natural business years. Further, the manufacture of our principal product has a variable natural business year which changes with the timing of new models. It is my belief that there would be very little advantage accruing to our company if accounting was on a natural business year basis.

Company B—There once was a tendency to establish a natural business year as around October 31, when the change-over to new models resulted in a shut-down for quite a long time. Nowadays, change-overs are made in such a manner that no shut-downs are necessary, as a rule, so we really have no seasonal fluctuation to warrant the

establishment of any other closing date than the one we are now using, namely, December 31.

Company C—Our business consists of twenty subsidiaries engaging in various operations—manufacturing, wholesaling, and retail stores. The end of a complete cycle of a year's business varies with each subsidiary, depending upon its operation. In certain of our subsidiaries the calendar year does approximate the natural business year, whereas in others a different cycle would be preferable. In our particular case, it would not be possible for us to adopt a natural business year that would be uniform for all companies. For this reason the calendar year closing has proved to be the most practical and satisfactory method.

Company D—We have never experienced too great a seasonal fluctuation in our business and, therefore, have never had called to our attention forcibly the effect of seasonal business. It is perhaps for this reason that we have never changed our year end. On the other hand, I, personally, am not too "sold" on the idea of using the bottom of the seasonal lull for a year end. If I were a banker, I believe I would want to see a balance sheet at a time when the greatest stress was put on the company's finances i.e., the peak of the seasonal business rather than the lull. Furthermore, one of the main advantages of a year end in the middle of the off season—taking inventory when it is lowest—can be obtained under any circumstance by taking inventory at its low point, which need not necessarily be the year end.

Company E—From time to time we have considered the adoption of a natural business year, as there would be many advantages from a business standpoint. However, the calendar year is used in so many other respects, particularly in connection with taxes, licenses and all other sorts of governmental reports, that we have come to the conclusion that the advantages to be derived from using the natural business year are more than off-set by the disadvantages. Consequently, we have continued to use the calendar year as our fiscal year.

Company F—As a generality, completing the accounting cycle at the close of the "natural" consecutive twelve months, or fifty-two weeks, is a logical and desirable thing to do, providing there are or should be at that time relatively advantageous and easily identifiable favorable accounting conditions present. The difficulty in our industry is that there is little, if anything, in the trend of normal operations from the standpoint of such factors as sales or inventory, whereby one time of the year can be readily identified as being more favorable than any other time of the year.

Some Observations

It is certainly very doubtful if any definite conclusions can be reached from the foregoing inquiry and its results. It seems justifiable, however, to make the following observations:

1. **The Natural Business Year Council has made some progress in its efforts to convince business and industry of the advantages of the natural business year.**
2. **Recommended fiscal closing dates may contain suggestions not acceptable to certain industries.**
3. **It may be that the best closing date is so dependent upon local conditions that it is difficult, if not impossible, to identify any one month or two months as constituting the best closing date.**
4. **Many companies are so diversified that it is impossible to determine a natural business year common to all divisions of the business.**
5. **Meeting the requirements of the various tax authorities is perhaps one of the most important factors in determining when the books are to be closed.**

An Application of Whole Dollar Accounting

by WAYNE R. ARCHERD

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Economy in accounting through minimum recording of decimals of the dollar—those two digits which customarily haunt the regions to the right of the decimal point—is a subject of continuing interest. The present article is a case study of this endeavour which has been broadened over the years in the accounting of one of the nation's largest companies.

DURING THE PAST FIFTY YEARS, cost accounting has been in a state of continual progress. Over the last thirty years such progress has been rapid. But progress never ceases—there are always new ideas being developed and tried by some companies, although many companies are loath to change their existing systems and to experiment with any new method or theory. Generally, the basic reasons for changing an existing accounting practice is to reduce clerical expense or to produce more intelligent (and readable) reports, or a combination of these two. It has been found in recent years by various companies that the elimination of the pennies from many or all reports and from most accounting entries has produced both of these results. It is natural that this is so, for in making cost distributions, in listing figures, and in typing reports, much clerical effort can be saved if pennies are ignored.

The terms, "pennyless accounting", "cents elimination" or "whole dollar accounting" have been used to identify this ignoring or elimination of pennies, to the greatest extent practicable, from accounts and reports. It also has been termed "cents-less accounting," although some persons have been inclined to make a pun of the word and to say it is "senseless" accounting. With that definition we cannot agree, nor will they, once they have adopted it in any material degree and realized its saving. The effect of cents values will be found to be of little importance except in those few accounts where it is necessary to know the exact cents balance.

Pioneering in Cents Elimination

We believe that Bethlehem Steel Company was a pioneer in accounting in whole dollars, for as early as 1928 it adopted what it has called "cents elimination." This procedure was outlined by its vice president and comptroller, F. A. Shick, in the issue of the *Journal of Accountancy* for November, 1941, in which he stated that Bethlehem had adopted the plan fourteen years before

that date. Bethlehem Steel, therefore, has more than 20 years of experience in this accounting practice and has found it to be highly beneficial in every respect. It believes that it has gone further in this type of accounting procedure than most companies, and yet it is continually studying to determine further improvements along this line. As a result of these studies, certain important changes have been made in recent years.

Many years ago Bethelehem's subsidiary railroads started preparing the reports for the Interstate Commerce Commission on the basis of whole dollars only and, after several conferences with the commission secured its approval thereof. Since that time, all such reports have been in whole dollars. In addition, all income tax returns of our various companies are made on the whole dollar basis and this has the approval of the tax authorities. We recommend that other companies give consideration to submitting their tax returns on the basis of whole dollars only, for simplification.

Alternative Methods of Whole Dollar Accounting

Just what do we mean by the terms "Whole dollar accounting" or "cents elimination"? We refer, in using such terms, to a determination of the manner in which such cents or pennies are to be recorded in the books and statements and the point beyond which their further accounting is unimportant and very costly. It is recognized, of course, that at the present time such accounts as customers' ledgers or accounts receivable, accounts payable, cash, etc., must be stated in dollars and cents (although there is an attempt today on the part of some companies to secure the approval of certain customers, at least, for rendering invoices in whole dollars only). As will be explained in more detail, Bethlehem Steel has followed a simplified procedure of invoicing for many years to the extent that it has rendered its inter-plant and inter-company billings in whole dollars only. Such inter-plant and inter-company billing is a very substantial figure, exceeding $300,000,000 in a recent year on our steel division alone.

Other than for the above-mentioned accounts, cents are merely bothersome and we believe should be eliminated from the records as promptly as possible. Certainly the busy executive will benefit from receiving reports which are not carried beyond whole dollars, as witness the further tendency today for many such reports to be stated in thousands of dollars, the adoption of such a practice depending to a considerable extent upon the size of the company which is reporting.

The elimination of pennies may be accomplished in one of two ways. The first is by dropping them or, as Bethlehem formerly did on sales invoices, by

separately listing and controlling the pennies as they appear on each transaction and then, at the month end, making an entry to some established account for the total value of all of the dollars and cents arising from this penny accumulation. The second is by rounding-off the pennies so that where the pennies are less than 50c they are dropped (separately controlled) but where they are over 50c they are considered an added sales dollar. Thus, $2.48 would be accounted for as $2, but $2.55 would be recorded as $3, with the complement of the pennies shown as a credit of $.45. Bethlehem Steel uses the latter method in most of its penny elimination, thereby keeping the monthly adjustment at as low a figure as possible.

Industrial Characteristics of the Company's Operations

Before we go into details of Bethlehem's accounting practices in this respect, it will be relevant to give a few facts about this corporation. These facts will point up the broader significance of our procedures.

Bethlehem Steel is an integrated corporation with more than seventy-five subsidiaries. By the word "integrated," we mean that in addition to steel plants, fabricating shops and shipyards, it produces, and in some cases transports, the materials out of which steel is made. This is to say that it owns and/or operates ore mines, coal mines, limestone properties, railroads, lake and ocean steamship companies, light, heat and power companies, real estate companies, municipal and industrial water companies, oil well supply stores, etc. In its eleven shipyards, it has the largest capacity to build ships of any company in the world. It is the second largest company in the United States in the production of steel, with a capacity of sixteen million tons of ingots and slightly less than twelve million tons of trade shipments of finished steel products per year. This capacity is just about equal to that of the entire steel industry of England. The company has approximately 150,000 employees and so ranks high among the leaders in industrial employment in the United States.

In its ten steel producing plants and thirteen structural fabricating shops, Bethlehem utilizes hundreds of different inventory, production and shipment accounts. In many cases, more than one plant will utilize the same account symbol where an identical product is produced. In addition to the basic product accounts, each such account may be sub-divided into many grade classifications, depending upon the chemical analysis of the bar, structural shape, sheet or other product, and this grade classification becomes, in most instances, a separate inventory segregation and is shown separately on the manifest for shipping purposes.

The above information is given here in order to point out that:

1. Bethlehem operates many and varied businesses and all are able to utilize cents elimination to some degree.
2. One or more of these businesses may not be widely different in size and complexity from companies in medium volume brackets. These should not be too hasty in deciding that they could not benefit from the adoption of this procedure.

Characteristics of the Company's General and Cost Accounting

In Bethlehem's accounting system all transactions during the year between the general ledger and the plant ledgers of a particular company are carried through a factory control account of which there is a subdivision in the general ledger for each operating plant or other unit (for example, Account 20A—Bethlehem plant), while transactions between plants and/or companies are handled through another control account termed "inter-company balances." At the year end or other closing period, such controlling accounts are eliminated by merging the plant ledger accounts (inventory, cash, etc.) with the comparable home office general ledger accounts to get the corporate consolidated picture.

The cost accounting in a steel plant consists of a large number of cost centers, i.e., manufacturing and service departments. Charges for labor, material and overhead expense are made to these cost centers or direct to manufacturing (job) orders for contract work in progress. The total monthly expenses of the cost centers representing service departments are spread to the other cost centers or to manufacturing orders on one of the following bases, whichever is most applicable:

1. Monthly man-days in each department.
2. Drafting hours.
3. Steam furnished (b.h.p. hrs.).
4. Water furnished (M. gal.).
5. Hydraulic power furnished (M. gal.).
6. Pneumatic power furnished (M. cu. ft. air).
7. Electric light and power furnished (M.k. w.h.).
8. Service rendered.
9. Oxygen or acetylene furnished (C. cu. ft.).
10. Material value charged.
11. Labor hours.
12. Machine hours.

The total expenses of the service department cost centers are in turn charged to inventory accounts or to job orders, where applicable, on one of a variety of bases. These include labor hours, weight furnished, etc.

WHOLE DOLLAR ACCOUNTING — THE PARTICULARS

In outlining the specific procedure under which various items are handled by Bethlehem Steel, it is the plan of this article to start with the cost records and proceed to the general accounts and reports.

Purchases from Vendors (Except Stores)

The accounts payable vouchers for material purchases are set up on the books as a liability in dollars and cents exactly as charged by the vendor, and are paid in dollars and cents. The accounts payable division in making its register distribution of these invoices to the various plants utilizes a form which provides for registering to each plant the rounded-off whole dollars of such vouchers, throwing the pennies (debit or credit) into a column for "cents." The plant is concerned with the dollars column, only.

At the end of the month, the total of the vouchers, as determined by the home office accounts payable department, is credited (in dollars and cents) to accounts payable on the liability side of the balance sheet, while the debit entries, which have been transferred to the respective plants through the control account, are made by the plant in whole dollars to the proper inventory accounts. The dollars and cents amount which represents the monthly accumulation of the cents column, is charged or credited to a general ledger account, commercial discount, which is a miscellaneous profit and loss account in the general ledgers.

It will be seen from this procedure that the plant accountant, upon receipt of vouchers and the transmittal register, has been charged whole dollars only, so that he distributes only whole dollars to his inventory accounts. If any such charge is to be distributed among various accounts on a percentage or some other proportionate basis, the accountant makes such distribution in whole dollars only, on the "give and take" plan.

Accounts payable vouchers covering charges to operating expenses or to construction orders, are handled under the same accounting procedure as are those for materials purchased from outside vendors. The liability to the vendor is established in dollars and cents, but the distribution to accounts is in whole dollars only, rounded off, with the pennies going into a separate account.

It may be noted here that materials purchased from other plants or companies of the corporation are on invoices which have been extended in whole dollars only, so that there is no "penny" problem in distributing them to the accounts affected.

Distribution of Stores

Miscellaneous stores and supplies, mainly of an operating expense character, present a special problem. At the time of their accumulation for cost accounting purposes, generally two or three times each month, the credit amount is estab-

lished in whole dollars by giving or taking on the net cents in the aggregate of all requisitions (by totaling the dollars and cents in the same addition) for each stores account and the debit also is adjusted to the whole dollar to agree exactly with the amount of credit determined for the value of all stores issued. Requisitions affecting charges to an account such as Bethlehem's account Q-5, which is named labor, material and expense incurred for others (which requires the eventual billing to a customer of the exact cost so accumulated) are treated dually. Costs are charged on the whole dollar plan, while the exact amount (dollars and cents) is accumulated for billing purposes.

Distribution of Freight

Inbound freight as paid by the works accounting department is a credit to cash and a charge to an inventory account for unaudited freight. This entry is in dollars and cents. Distribution to the various accounts is in whole dollars on the "give and take" principle and the cents remaining are charged or credited to an *inventory* account for cents elimination in the works ledger.

Outbound prepaid freight is a credit to cash and a charge to the same unaudited freight account in dollars and cents. The total amount of such freight is cleared each month by a journal entry crediting unaudited freight in dollars and cents, while debiting the plant control account with whole dollars and debiting the plant's cents elimination account with the cents. This transfers outbound freight from the works ledgers. To enter it on the general ledgers (home office), a journal entry is prepared which charges a miscellaneous liability account on the general ledgers termed "provision for transportation," in dollars and cents, while crediting the home office control or clearing account in whole dollars and crediting the cents to commercial discount.

Th entries outlined above for this prepaid, outbound freight might look like the following:

Works ledger:		
Unaudited freight	$2,530.18	
Cash		$2,530.18
To record the payment of the freight bill		
Home office (control account)	2,530.00	
Cents elimination	.18	
Unaudited freight		2,530.18
To transfer to the home office general ledger.		
General ledger:		
Provision for prepaid transportation	$2,530.18	
Plant (control account)		$2,530.00
Commercial discount		.18
To pick up the above transfer from the plant		

Merchandise sales value	$2,530.00	
Commercial discount	.18	
Provision for prepaid transportation		$2,530.18

To establish the provision from customers' invoices at the time billing is rendered

The Matter of Pay Rolls

Wage payments to hourly rated or piece-work employees will, of necessity, be calculated in dollars and cents and so paid. In distributing and charging such direct or indirect labor expense to the proper processing or production account, job order cost sheet, factory expense account or miscellaneous expense account, only whole dollars are charged, again using the "give and take" method, while the few cents remaining from such payroll distribution are charged or credited to the cents elimination inventory account on the works ledger. Here, again, Bethlehem has eliminated all pennies from the detailed distribution, so that the accounting thereafter is maintained in whole dollars only. At the year end, the works ledger account for cents elimination is transferred to the home office where it is taken to profit and loss as an inventory adjustment.

In exceptional cases, a distribution involves rendering invoices for the exact cost incurred (usually applying to miscellaneous accounts, such as the one referred to earlier, labelled Q-5—Labor, material and expense incurred for others), while the cost accounts are charged in the same manner as all other accounts on the whole dollar basis. In these cases, there is an additional record maintained for billing purposes only, upon a dollar and cents basis.

Use of Whole Dollars in Process and Departmental Costing

Thus it is that charges to production for material, for labor and for expense are recorded in the works control accounts, as well as in the detailed accounts thereunder, in whole dollars only. When the monthly cost of production of a department is determined in whole dollars, it is generally resolved into a dollars and cents per ton rate or, in a few instances, in a rate per pound. In the case of a processing department, this rate will then be used (after adding a factor for shipping expense) as the rate which, when extended by the tonnage which moves to the next processing department, will give the amount of cost to carry forward in such production. However, this extension will be carried to the production or costing sheet in whole dollars only. Thereafter, as the product moves from operation to operation until completed for shipment, the labor and expense

in each further processing shop, as well as any additional materials that may be used, will be charged in whole dollars as outlined above. This practice is carried throughout all production operations to the finished inventory ready for shipment.

Where service departments are involved (departments producing light, heat, power, water, etc.), the procedures outlined above are followed in accumulating the cost of labor, overhead and supplies. The distribution of accumulated expense to the pertinent operating departments is made on various bases but always in whole dollars, only.

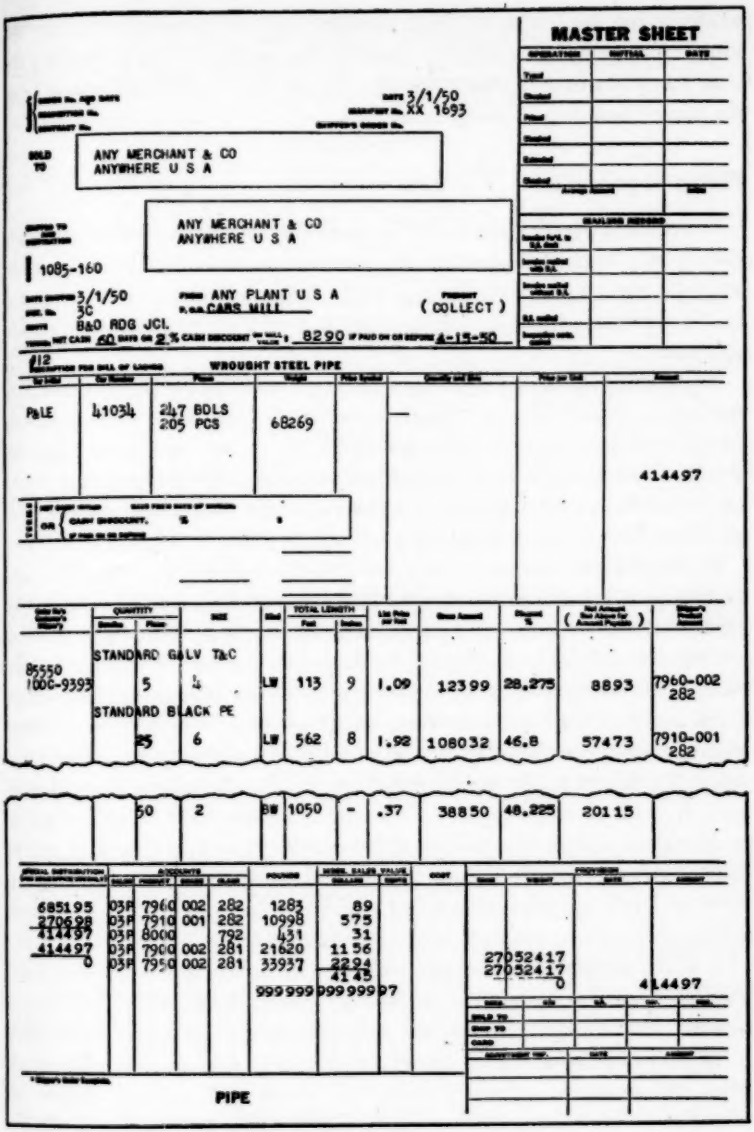
In many, if not most, of Bethlehem's steel producing departments, there is scrap remaining from cutting, turning, boring, scarfing, chipping or other operations. This scrap is credited to the department which produced it (and to the product account and/or order within such department), and charged back to the scrap yard at an established rate based on current market conditions. This credit is rounded off to whole dollars after the pounds so salvaged are extended at the scrap rate per ton.

Inventories, Transfers and Operating Profits

Inventory accounts, except for the two accounts heretofore mentioned—cents elimination and unaudited freight bills—are maintained throughout in whole dollars, and all charges or credits thereto are likewise in whole dollars. Annually, as physical inventories are taken, although the quantities are extended on dollar and cent per ton rates, the extensions are rounded off to the nearest whole dollar.

All entries by the plants to either of the two plant control accounts—intercompany balances and home office—are in whole dollars. If cents must be transferred to another plant or division, the plant inventory account for cents elimination is charged or credited on the receiving plant's journal voucher and the same account is credited or charged on the forwarding plant's journal vouchers. If cents must be transferred to the home office, then the general ledger commercial discount account is charged or credited on the home office journal voucher and cents elimination is credited or charged on the plant's journal voucher. As stated above, the plant's cents elimination account is cleared to inventory adjustment at the year-end.

It follows naturally from the above method of keeping records that all of the reports prepared by the various plant accounting departments for operating and top management are prepared in whole dollars only, although it is customary to show per ton rates in dollars and cents on certain reports. Others show rates in



MASTER SHEET

OPERATION | INITIAL | DATE
Typed
Checked
Priced
Checked
Extended
Checked

MAILING RECORD

DATE 3/1/50
XX 1693

SOLD TO
ANY MERCHANT & CO
ANYWHERE U S A

SHIPPED TO
ANY MERCHANT & CO
ANYWHERE U S A

1085-160

DATE SHIPPED 3/1/50
VIA SC
TERMS 8&O RDG JCL
FROM ANY PLANT U S A
P. O. NO. CARS MILL
FREIGHT (COLLECT)
NET CASH 60 DAYS OR 2 % CASH DISCOUNT IF PAID ON OR BEFORE 4-15-50
VALUE 8290

12
WROUGHT STEEL PIPE

Tag Letter	Tag Number	Pieces	Weight	Price Symbol	Quantity and Size	Price per Unit	Amount
P&LE	41034	247 BDLS 205 PCS	68269				414497

TERMS
NET CASH VALUE DUE DATE OF INVOICE
OR CASH DISCOUNT, % $
IF PAID ON OR BEFORE

Order No. / Bill of Lading No.	Quantity: Bundles	Quantity: Pieces	Size	Kind	Total Length: Feet	Total Length: Inches	List Price per Foot	Gross Amount	Discount %	Net Amount (Not Allowed for Account Purchases)	Shipper's Order Number
85550 1606-9393		STANDARD GALV T&C									
		5	4	LW	113	9	1.09	12399	28.275	8893	7960-002 282
		STANDARD BLACK PE									
		25	6	LW	562	8	1.92	108032	46.8	57473	7910-001 282
		50	2	BW	1050	-	.37	38850	48.225	20115	

Special Distribution (Production Order No. or Job)	Accounts: Balance Property	Accounts: Branch	Accounts: Class	Pounds	Gross Sales Value: Dollars	Gross Sales Value: Cents	Cost
685195	03P	7960	002	282	1283	89	
270698	03P	7910	001	282	10998	575	
414497	03P	8000		792	431	31	
414497	03P	7900	002	281	21620	1156	
0	03P	7950	002	281	33937	2294	
						4145	
					999999	999999	97

PIPE

PAYMENTS

Date	Voucher	Date	Amount
	27052417		
	27052417		
	0		414497

SOLD TO
SHIP TO
CARD

Shipment No.	Date	Amount

EXHIBIT 1

whole dollars per ton, only. This elimination of the cents serves to save the time of management in reviewing results for the month. In fact, if this were the only saving, we believe it would be of sufficient value to merit consideration of the plan of recording in whole dollars.

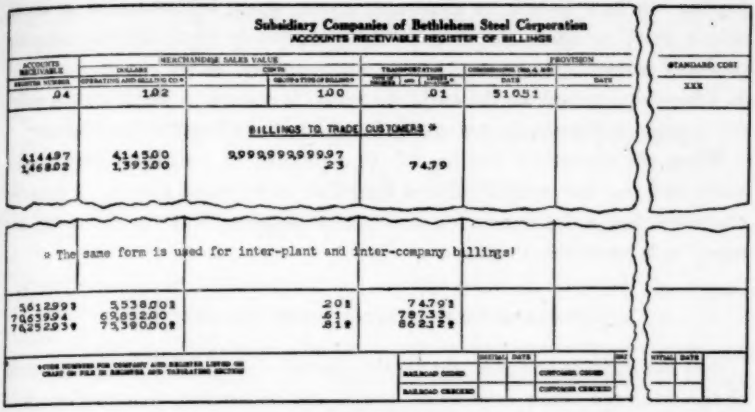
Billing Procedures

It was stated previously that it is the practice of Bethlehem to invoice in whole dollars only, material shipped between plants and companies of the corporation, although invoices to trade customers are in dollars and cents and are so posted to the accounts receivable ledgers. Exhibit 1 is a sample invoice to a trade customer.

The distribution of billing on each invoice is made by the billing operator at the bottom of each invoice. She takes the accounts receivable value, separately records and deducts any freight provision, sales commissions or other such deductions, and then calculates the remainder to the nearest whole dollar, recording this under the merchandise sales classification, so that the pennies as shown (and to balance) are always less than 50¢ and may be either a debit or a credit.

At the time that each invoice is registered and controlled by company and type of billing, it is listed on a form like that represented by Exhibit 2. It will be noted that the accounts receivable value is shown in the left-hand column in dollars and cents. The distribution is taken from the lower portion of each invoice. Cents are posted in the third column. In the columns to the right are listed provision for sales commission, freight or other transportation provision, etc., which must be in dollars and cents and the remainder of the billing value, which Bethlehem terms Merchandise Sales, is in whole dollars only and is recorded in the second column from the left. Standard cost, where figured on each invoice, is register controlled at the extreme right of the form. It will be noted from this that Bethlehem does control the pennies on each invoice. It never arrives at any penny elimination by guessing or by a monthly adjustment of certain incomplete accumulations to a predetermined total.

It is the merchandise sales value column (whole dollars) which is recorded through tabulating cards by plant, product account, grade analysis, sales classification, district office, customer, etc., and against which the cost in whole dollars is applied to determine gross profit. All reports of tons shipped are in whole tons. All reports of sales, cost and profits are in whole dollars. Reports are issued recording tonnage, billing values, and/or profits by plants and by departments or divisions within the plants, by district sales offices, by certain customers, by companies, etc. All are issued in whole dollars.



Subsidiary Companies of Bethlehem Steel Corporation
ACCOUNTS RECEIVABLE REGISTER OF BILLINGS

ACCOUNTS RECEIVABLE	MERCHANDISE SALES VALUE			PROVISION		STANDARD COST
	DOLLARS	CENTS				
REGISTER NUMBER	OPERATING AND BILLING CO.*		QUANTITY OF BILLINGS*	TRANSPORTATION	DATE	DATE
04	102		100	01	51051	
		BILLINGS TO TRADE CUSTOMERS *				
414497	414500	9999999999997				
146802	139300	23		7479		

* The same form is used for inter-plant and inter-company billings.

5612993	5538001	201	74793		
7065924	6965200	61	78733		
7425293*	7539000*	81*	86212*		

* NOTE NUMBERS FOR COMPANY AND REGISTER LISTED ON CHART OF FILE IN BILLINGS AND TABULATING SECTION

	DISTRIB. DATE			VIRTUAL DATE	
RAILROAD CHECKED			CUSTOMER CHECKED		

EXHIBIT 2

At the end of the monthly accounting period, the total amount from all register controls under the column for merchandise sales value in whole dollars, plus the *dollars* shown in the total of the cents column, are credited in one figure to the general ledger profit and loss account for merchandise sales. The various merchandise sales details are recorded for sales and operating reports by plant, product, etc., while those dollars, mentioned above, which represent the accumulation of cents (net debits and credits), are credited to an account for merchandise sales—general plant, cents elimination. The remaining pennies under the cents column are then credited to commercial discount. Thus, the accumulation of all invoices and of all register controls for one company or division for the month might require the following accounting entry to summarize the procedure set forth above:

		DEBIT	CREDIT
Accounts receivable—Public		$33,002.62	
Merchandise sales (various product accounts by plant)	$32,890.00		
Merchandise sales (Cents elimination, general plant)	7.00		$32,897.00
Commercial discount			.34
Provision for transportation			77.28
Provision for sales commission			28.00
Total		$33,002.62	$33,002.62

Property, Plant and Equipment

These accounts are maintained in whole dollars only, as is the reserve for depreciation applicable thereto. Charges to these accounts arise from accounts

payable vouchers (which, as mentioned above, would be distributed in whole dollars only) or from labor and overhead charges or from bills for company produced material. These would be in whole dollars. When equipment is sold or otherwise disposed of, the credit therefrom is entered in whole dollars only, any pennies incident to the transaction being credited to commercial discount.

When one remembers that the life of a property or equipment item is estimated and that the residual value is thus, also an estimated amount, it is easily concluded that a dollar rate for depreciation purposes is as near complete accuracy as is practicable to obtain.

SAVINGS RESULTING FROM CENTS ELIMINATION

It is not difficult to realize the saving effected through eliminating the work of balancing out penny differences. Errors will be lessened, transpositions will be fewer. Bethlehem, after twenty-two years of using this procedure, cannot estimate with accuracy the great value of the saving to it today, resulting from adoption of this practice. However, the Dravo statement in the article cited earlier that it had reduced its clerical staff nine per cent after five months of use of penny elimination does not seem at all excessive.

In addition to the clerical work eliminated by dropping pennies from various reports, there are other savings to be realized. Most companies use some type of calculating equipment, (adding machines, electric calculators, etc.) and such equipment generally carries two columns on the right for the cents accumulation. It is possible to have the keys on such machines changed so that there are no penny columns on the right and, in this manner, it is possible to buy equipment of smaller capacity at a considerable saving, while still utilizing the full number of columns which would be needed for the whole dollar distributions.

Another saving is obtained through dropping the pennies on various reports, making it possible to use a smaller-sized report or to insert more data on the present sized form. Where statements are printed, this will result in a saving in printing costs. Otherwise, it will result in a saving in typing. Again, where tabulating equipment is used, it is possible to put more information on a single card if it is not necessary to key punch the pennies for the various accounts.

Competition continues to increase. Accountants will be asked more and more by management to find new ways to reduce clerical expenses, to simplify procedures, to provide better reports. In all of this, whole dollar or penny-less accounting points to one definite step. Industrial companies generally will do well to consider its adoption.

THE WORKSHOP

Accounting for Repair and Maintenance Supplies

by HORACE J. SMITH

Control Manager, Chicopee Plant, U. S. Rubber Co., Chicopee Falls, Mass.

A PROCEDURE IS OUTLINED in this article, which has been tested in operation and is effective for cost reduction. It deals basically with the functional operation of a stores group as custodians and a stores accounting group responsible for proper recording and implementing of control.

The only detailed record kept of the physical movement and unit prices of stores items is on the bin card (Exhibit 1) maintained in the individual unit bins in the storeroom. There are individual bin cards for each item. These show subaccount classifications as assigned by the stores accounting section and detailed in a subsequent paragraph. The stores accounting section maintains stores control cards for each of these subaccount classifications, on which the only entries are the dollar values of the invoices received from account payable and consumption posted from a monthly recapitulation by subaccounts, based on units withdrawn and extended at the latest unit price available at the time of withdrawal. The balances on these control cards are considered as the inventory.

No check is made of this balance except at the time of the bin card inventory taken every three months. At this time, a physical check of twenty-five per cent of the stock is made and is used as a partial explanation of the differences between the inventory and the balances shown on the stores accounting control cards. The bin card inventory consists of multiplying the balance of units on hand, as per the bin card, by the latest unit price posted on the card. These extensions are totaled by subaccount classification. The inventory valuation thus arrived at is checked to the balance shown on the subaccount classification control card kept in the stores accounting section. The difference, if large, is investigated. If normal, it is charged as additional consumption. (It is in connection with these inventories that the bin card dollar columns are used.)

Listed below are the subaccount classifications used by the X plant. Following it there is also outlined the procedure followed by X Plant in handling these items. The classifications are these:

BIN CARD

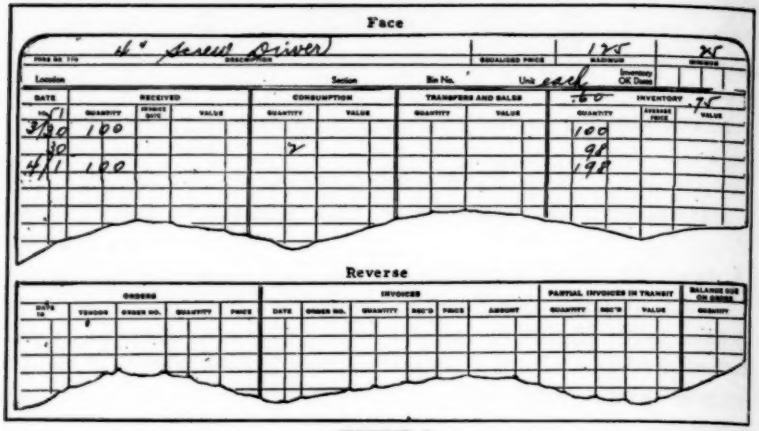


EXHIBIT 1

ACCOUNT NO.	ITEM
1.1	Maintenance stores
.111	Pipe shop—Minor items—Nuts, bolts, etc.
.112	Pipe shop—All other
.121	Machine shops—Minor items—Nuts, bolts, etc.
.122	Machine shops—All other
.131	Electrical shop—Minor Items—Nuts, bolts, etc.
.132	Electrical shop—All other
.141	Carpenter shop—Minor items—Nuts, bolts, etc.
.142	Carpenter shop—All other
.151	Miscellaneous maintenance supplies
.24	Spare parts—Major
.75	Spare parts—Minor
.312	Miscellaneous factory supplies
.412	Pipe shop—All other
.422	Machine shops—All other
.432	Electrical shop—All other
.442	Carpenter shop—All other
.24	Spare parts—Major
.25	Spare parts—Minor

Bin Card Procedure

The bin card comes into play as soon as material is ordered. It will be noted that the reverse of the form provides for order date, purchase order number, quantity ordered and price, as well as for the vendor's name, together with section to enable ready reference to the status or orders.

Three copies of each invoice are received and distributed as follows: (1) central office accounts payable, (2) X Plant stores accounting section and (3) maintenance stockroom stock clerk. The stock clerk posts his units to the received section of the face of the bin card from the receiving ticket after checking in the material. When

his copy of the invoice is received from accounts payable, he matches it with the purchase order and the receiving ticket to be sure the items ordered were delivered and that the billing was for the number of units actually received.

A copy of the receiving ticket is sent to the stores accounting section where it is attached to the file copy of the invoice.

After he has completed his check, the stock clerk enters the unit price per the invoice on the bin card. With each subsequent invoice, after completion of checking, he crosses out the last previous unit price and inserts the current unit price. On the bin card shown, the unit cost for the 100 items received on March 30 was $.60 and the receipt on April 1 showed the unit price to be $.75 each.

Before any item can be delivered by the stock man, it is necessary for the department requiring the material to prepare a requisition in tabulating card form on which space is provided to identify the employee withdrawing the material, stores account to be credited, department initiating the requisition and the job order to be charged. On receiving this requisition the store clerk pulls the items and posts the withdrawal on his bin card in the consumption section. He then takes the most current unit price shown on the card and inserts this value on the requisition. The stock man also inserts on the requisition the stores account to be credited, taking this from his bin card. The latest price is always used for costing requisitions.

Posting the Control Cards

The requisition is then forwarded to the stores accounting group and the tabulating department. The requisition is extended by the stores accounting department and the dollar value entered on the control cards. It is then forwarded to the tabulating department where the necessary information is key punched and the monthly recapitulation of maintenance and miscellaneous factory supplies prepared showing amounts charged to the various job orders and credited to the various stores subaccounts.

Receipts are posted to the stores accounting control cards from the second copy of the supplier's invoice. Only the dollar value is posted. As stated earlier, no record of units is kept on the control cards. The balances on the cards are used to control the trimonthly bin card inventory which has been mentioned. The differences developed from this inventory are credited or charged to as mechanical shops-overhead expense. As a general comment, it can be stated that any sharp fluctuation in the unit prices could distort the inventories under the procedure described. The X Plant has not had any experience of this nature.

Handling of Smaller Stores

Some modification of procedure is introduced with respect to the four

"minor item" accounts listed earlier—those relating to nuts, bolts, etc., for the pipe, machine, electrical and carpenter shops. Material bought under these classifications is charged directly to overhead expense. Bin cards are used in the manner described for other items and unit prices are inserted upon each receipt. However, no extensions are made on the requisitions, nor are receipts or consumption figures posted to stores accounting control cards. The inventory taken at the end of the three-month period for those classifications is used simply to revise the dollar inventory balance as shown on hand on the stores accounting control cards, upon which no entries have been made since previous inventory. Any difference between the balance on hand and the prior inventory valuation is charged or credited to overhead expense.

However, the same short-cuts are not employed for miscellaneous maintenance and factory supplies. These consist of gloves, knives, emery cloth, etc. The procedure followed is basically the same as that described for major items. Receipts are entered in the control card from file copy of the invoice furnished accounts payable. Use requisitions are forwarded to the stores accounting section where they are extended. A recapitulation is prepared by the tabulating department at the end of the month, listing the withdrawals on behalf of each department. This recapitulation, which is prepared on peg strips, also forms part of the accumulation of the departmental expense in the burden distribution. The consumption is credited to the stores record control account card for the dollars consumed.

What the System Pre-Supposes

The establishment of this type of system requires the following:

1. A good physical control of stores items. It is preferable to have them under lock and key.
2. A bin card inventory should be taken at least every quarter when the system is first established. All differences of any size should be reconciled and any discrepancies in procedure should be corrected. These checks should, of course, be selective checks at the time of the bin card inventory.
3. The warehouse stock clerks must be informed that the bin card inventory should tie out closely with stores accounting control record. They should be impressed with the importance of their function and responsibility of maintaining proper control of stock.
4. The accounting control cards kept by the stores accounting section and three-month inventories taken to reconcile to their balances, should be recognized as the control features of the system. These control cards are tied out each month to the general ledger balances by account.

More Effective Stores Accounting

The accounting treatment given supply expense in most manufacturing establishments could stand review in the light of the desired objective as compared with time and effort expended accomplishing it. Individual items involved run into the hundreds and, in many instances, thousands. The goal is an accounting system which will provide management with protection and control and, at the same time, be the means of obtaining

a reasonably accurate cost distribution to the benefitting processing departments. In most manufacturing concerns, direct production material costs are controlled and distributed accountingwise with much less stores accounting man-hour effort, relatively, than is given to the recording and distribution of supply expense. The latter tends to run out of proportion to control achieved.

The above described operation has proved successful from the points of view of economy and control. Individual stores cards for each and every expense item (other than bin cards) are not needed. There are also many added points in favor of a stores accounting procedure of the type described, in connection with analysis and control features. For instance, statistics can be run off periodically, preferably monthly, listing quantities and values of individual items as issued to departments or divisions. Run-offs can be made by item or part number if desired. The various analytical pictures which can be made are numerous and basic information, as reproduced on tabulating cards, can be put to good advantage in an endeavor to hold supply expenditures to a minimum.

This procedure may be used to effect savings in sections other than stores accounting. The monthly summaries of stores expense, as developed, will tie in directly to plant accounting and general burden distribution and will facilitate maintenance of the related records. Although best performed on tabulating equipment, the procedure can be adapted profitably to a wholly manual rountine. However, the statistical data for analysis purpose will not be so readily available.

Charging Maintenance Department Costs

by FRANK L. PALMER

Controller, F. C. Huyck & Sons, Albany, N. Y.

PLANT MAINTENANCE as a general category properly includes all ordinary repairs and maintenance in the care of the buildings, machinery, and equipment of an industrial organization. In one moderate size plant, the maintenance department of which "posed" for this study, the department finds itself engaged at times in producing fixed assets also. These may be additions to buildings, new electric circuits, etc. Sometimes the department works in conjunction with an outside contractor, each contributing part of the resulting asset value. This contribution to fixed asset values occurs most often in connection with setting up purchased machinery, furnishing foundations, and installing piping and wiring, etc.

Maintenance Department Setup

The plant maintenance department consists of supervisors and mechanics who are skilled in the various trades such as electricity, carpentry, painting, steamfitting, and the like. The department is under the direct supervision of the plant engineer who is responsible to the superintendent. Each craft group operates separately under its own foreman but, ordinarily, no such separation is required in charging for its work. The foremen (boss carpenter, boss painter, etc.) keep time tickets (or time books) for the men in their groups and also prepare and sign requisitions or purchase requests for material needed. Materials not in stock are purchased by the purchasing agent upon request of the foremen, approved by the plant engineer, or upon the request of the engineer alone.

The department occupies its own quarters, apart from the producing department of the plant and it is comparatively simple to identify all departmental costs — labor, material (directly acquired or requisitioned from stores), and overhead. All these costs, as charged to the department, find their way into plant maintenance costs and fixed asset costs. It is with the problem of allocating these costs that this study deals. Indirect overhead is not apportioned to the department both because it would necessitate extra accounting work and because the practice is questioned.

Number Identification for Jobs

At the outset of any work assignment, a definite determination is made as to whether the job will result in an item of asset nature or an expense. This determination must be made regardless of the fine hairs which may have to be split and, once made, is adhered to until the job is finished. The final closing out of the cost affords an opportunity to revise the charge if such revision is needed.

To illustrate the distinction which must be drawn, let us assume that the superintendent instructs the plant engineer to tear out fuel oil tanks and install coal bins. The engineer's analysis reveals to him that he is undertaking two distinct jobs of different natures and with different ultimate accounting treatment. One involves the expense of removing something no longer useful and the second consists of the cost of building something new in the plant. He makes out an order form in triplicate for each job.

At this point, it will be simpler to take up the trails of the two order forms separately. Each time an asset is made or purchased or brought back into service, the engineer assigns a serial number (such as 43-101 for the one-hundred-and-first asset acquired in 1943). The number assigned to the asset job will, therefore, be the next consecutive number following the last number assigned to an asset acquired or constructed. In his office file, the

engineer sets up a folder or envelope bearing this number and containing the duplicate copy of the order he has prepared, copies of suborders, blue prints, requisitions, purchase requests, and other pertinent data—all of which is identified clearly by the serial number of the job. The originals of the order and of the suborders go to the maintenance department group bosses and, in our illustration, a purchase request for lumber goes to the purchasing agent.

The third copy of the work order (but not subwork orders) is routed to the factory office where the plant accountant prepares a sheet or card for his "fixed assets in process" subsidiary ledger, copying from the work order enough information to give the new account a clearly descriptive heading, even though it will be referred to always by number. The description in the heading has been found a good check against error in charging items incorrectly because of mis-reading number, etc.

The other order is for repairs and maintenance because taking out tanks does not create asset value. A code number is assigned to the task but, instead of being a brand new number as in the case of the asset job, the number assigned is one which is used permanently for repairs to (in this case) the power plant building. It consists of the letter "R" prefixed to the applicable operating identification of the asset. Each department of the plant has been given a code letter and each group of assets within the department a code number. Moreover, each item has a departmental number.

Hence, for example, the last forge acquired in the machine shop might be designated C-18-5, and maintenance work on it would be identified with this number preceded by the letter "R". Although the charge in the ledger probably would be summarized in one account, "repairs and maintenance—machine shop machinery and tools", an analysis of the account is readily made by reference to time records material charges, etc., and the complete history of repairs and maintenance to this particular item of equipment is available in the binder or file of work orders, as will be shown.

Thus, the assumed job of removing tanks might be designated simply R-H-1 for "repairs and maintenance, power plant building". The original of the work order form, numbered R-H-1, will go to the maintenance department foreman, who will be in charge of the work. The order will instruct him to remove the tanks and either put them in some designated storage place or junk them. The second copy of the order will be placed in the engineer's office files in a folder or envelope which will bear the designation H-1 and which will contain all orders having to do with repairs and

maintenance of the power plant building. The third copy—as in the case of the fixed asset job—will go to the factory office and will be placed in a binder or file under H-1.

Completion and Change Reports

Work may or may not be started on the two jobs simultaneously. When the jobs are completed, the plant engineer must make two written reports to the plant accountant. He must report the completion of the coal bins so that the charges may be transferred from the "process" account to the proper fixed asset account. This report should indicate estimated life for depreciation purposes. If any item charged to cost as the job progressed, should be transferred to expense, the report will carry this information. The plant engineer also makes a report to the factory office showing disposition of the tanks. He is responsible for furnishing the amount to be written off the asset and reserve accounts, although it is necessary for him to work this out with the plant accountant who has the original cost data available.

At times it is necessary for the plant engineer to inform the accountant of a revision in depreciation rate applicable to an asset which may have been placed in storage or put to a new use. All such advices from the plant engineer to the plant accountant are prepared on consecutively numbered forms in duplicate. The originals are turned over to the plant accountant and become the basis of journal entries, depreciation rate changes or other revisions in his records, and are filed by number sequence. All entries and quotations based upon these advices bear the serial identification numbers shown on the forms. Duplicates of the advice form are retained by the plant engineer for his own file.

Costing the Jobs

The task of accumulating the costs as the work progresses remains to be described. Time tickets or time reports come into the factory office from the maintenance department bearing the designations such as R-H-1 and 43-101 (cited above), among others. All these labor tickets or reports are priced and extended and entered on a recapitulation sheet. At the end of each month the information on this sheet is condensed and made into a journal entry charging fixed assets in process account and the various applicable overhead accounts (including general factory overhead for the uncharged time) and crediting maintenance department payroll account which has been charged each payday with the total wages for the department. The charge to fixed assets in process is posted in detail from the recapitulation sheet to the subsidiary ledger, and a similar breakdown may be made of the charges to overhead accounts, if such is desired.

The same arrangement of control account and detail posting applies to

items in the material requisition journal and to items of direct overhead, etc., in respect of purchases specifically for jobs and charged through the voucher record. Other items of overhead directly chargeable to the department are carried in an account called maintenance department overhead. If any further distribution of direct overhead to jobs is practicable, a journal entry is written at the month-end making such distribution. Undistributed direct overhead is charged out each month by journal to general factory overhead.

The maintenance department has no inventory of materials, since materials acquired directly for the department are charged to fixed assets in process account or one of the regular factory maintenance overhead accounts, when entered. Neither is there a work in process inventory, for the same reason. All material and labor have been charged directly when acquired or have been absorbed in general factory overhead. There may be cases, however, in which the pay period and the accounting fiscal period may not coincide and there will be an item of accrued wages in the maintenance department payroll account after the distribution entry is posted.

Although the problem of overhead distribution is very nearly ignored in the setup described, it would not be difficult to make a distribution of direct overhead, indirect overhead, and idle time, if it were wanted. As pointed out at the start of this paper, there is a question of theory as to just how much overhead should be charged to cost of a fixed asset. So far as charging overhead to a maintenance job is concerned, it is just so much reshuffling and may or may not be worth the effort. But, if it were desired to make the maintenance department stand on its own feet, it would be necessary only to establish a rate of absorption for overhead each month, probably based on labor hours, and to charge out the overhead on jobs done, whether new asset or maintenance work.

Detail As Needed

The subject of specific accounts to be charged for material, labor, and supplies on maintenance jobs such as R-H-1, has not been treated in detail. Yet this is perhaps the simplest part of the plan. As in any other cost system, our cost ledger contains accounts for repairs and maintenance for all departments in the plant, whether the accounts are so named specifically or not. The distribution to such accounts through the voucher record, the requisition journal, and the payroll analysis entries may be done in as great detail as one may wish for analysis purposes. However, with our separate record of the jobs done (the order forms) much of the detail may be eliminated from the ledger, since the office copies of

the repair orders will answer almost any question concerning maintenance work in any department.

One more point needs explanation with respect to the fixed assets in process. When an asset-type job, such as the coal bins, has been completed and the subsidiary ledger account balance is transferred to the regular fixed assets ledger and control, the subsidiary ledger card or sheet is permanently filed for income tax or other reference purposes. Only pertinent information is carried to the new account, but there is a definite distinction made between cost of purchase or manufacture and additional cost to install.

The need for this is evident in the case illustration we have been using, when the task of correcting the account for the oil tanks is considered, assuming they are being stored for the time being. The cost of installing the tanks must be written off entirely so that the tank accounts, both asset and reserve, reflect only present depreciated value of the unattached tanks. A transfer of such value may be made to a fixed assets in storage account or the subsidiary account in the fixed assets ledger may be moved physically to a portion of the ledger set aside for such assets or a notation may be made on the ledger card or sheet and on the depreciation schedules.

The Point Not to Miss

For the sake of brevity, no attempt has been made to explain here the forms and routines in detail. It is probable that no two plants could use identical procedures. Whatever the adaptation, it is a simple matter for the maintenance department to designate on material requisitions, purchase requests, time tickets, etc., the serial numbers of asset-type jobs and the code numbers of expense-type jobs. It is equally simple for that information to be followed through so that the ultimate charge is made to the right account and in the right amount. That is the chief goal of the system.

THE COST FORUM

TIMELINESS AN ESSENTIAL IN FILING FOR CERTIFICATES OF NECESSITY

1. Comment on qualifying dates, keyed to article in September, 1951 issue

Editor, N. A. C. A. Bulletin:

THE ARTICLE IN THE *N. A. C. A. Bulletin* for September, 1951 entitled "Records for Accellerated Amortization Deductions" by John-B. Van Haelen was timely, well-written and thought provoking. While the author specifically pointed out that his manuscript was prepared only for the purpose of setting forth the importance of keeping accurate records covering necessity certificates and while the paper was prepared with obvious care, I feel that, at certain points, the material presented may tend to mislead readers not fully conversant with the applicable law, regulations and administrative procedures. This letter is offered in an effort to assist in clarifying these points.

First, from a review of the text of the article and exhibits, it appears that the top portion of Exhibit 4 is intended to reflect a situation where an application for a Necessity Certificate was filed under date of March 28, 1951 and the certificate was issued under some date prior to March 15, 1952 (the last day of filing a 1951 calendar year income tax return.) However, in such a case, the total cost—or a portion thereof—of the items shown on Lines 13 and 14 would not ordinarily be recoverable through amortization as shown in that exhibit. This is due to the restrictive language contained on the face of a Necessity Certificate which reads in part,

> "As to the described facilities which are to be constructed, reconstructed, erected, or installed, this certificate shall be valid only with respect to those facilities the construction, reconstruction, erection, or installation of which is *begun before the expiration of six months after the date of this certificate;* and as to the described facilities which are to be acquired, or which are to be acquired and installed, this certificate shall be valid only with respect to those facilities *acquired or contracted for before the expiration of six months after the date of this certificate.*"

Second, a study of the article and its Exhibit 4 leads to the conclusion that the middle portion of the exhibit reflects a case in which an application for a Necessity Certificate was filed at some unspecified date prior to August 28, 1952, and the certificate was issued under that date. In such case, the items shown on Lines 12, 13 and 14 would meet the "six month" language of the Necessity Certificate, as set forth above, and amortization of the certified portion of their costs would be allowed as indicated on the exhibit.

However, a question arises as to whether the application was timely filed as to the items on Lines 2 and 9 so as to permit a portion of their costs to be recovered through amortization allowances. This query arises because Section 124 A (e) (1) of the Internal Revenue Code and Section 600.3(c) of the Necessity Certificate regulations provide, in effect, that a certificate will not permit the recovery of the cost of a facility through amortization where the facility was constructed, reconstructed, erected, installed or acquired after September 23, 1950, unless an application therefor was filed *before the expiration of six months after the beginning of the construction,*

reconstruction, erection or installation or the date of acquisition of such facility.

In view of these statutory and regulatory provisions, the application which resulted in the issuance of the certificate under date of August 28, 1952, would not permit the cost of the item shown on Line 9 to be recovered through amortization unless the application was filed on or before August 10, 1951. Likewise, the last filing date for an application which would permit the recovery through amortization of the cost of the item shown on Line 2 would have been September 15, 1951.

Like Mr. Van Haelen's article, this letter is not intended to answer all general questions bearing on the problem of amortization of emergency facilities. However, it is intended to point out the importance of timing:

(1). The filing of an application for a necessity Certificate with the commencement of construction, reconstruction, erection, or installation of a facility or the acquisition thereof prior to such filing.

(2). The commencement of construction, reconstruction, erection or installation of a facility or the acquisition thereof subsequent to the issue date of the Necessity Certificate.

STANLEY J. CURRAN, *Washington Chapter*

2. Response by Mr. Van Haelen.

Editor, N. A. C. A. Bulletin:

Unquestionably, I cannot disagree that "timeliness" is a very important factor; however, in this particular case it is felt that I must take exception to one of Mr. Curran's points, and apologize for an incorrect heading for the other.

The restrictive language on the face of a necessity certificate which in part he has underlined "acquired or contracted for before the expiration of six months after the date of this certificate" is indeed the crux of timeliness. In Exhibit 4 under Column 2 "Date Closed," I have shown the date the accounting department actually closed the work order, which has no bearing upon the date *"contracted for."* May I state that this is in no way an unusual occurence, and that it is not felt that an examining agent would take exception thereto.

As to the exception taken to the middle portion of the exhibit, undoubtedly, Mr. Curran is correct. However, the title "Application Dated August 28, 1952" should have read "Application dated March 28, 1951, as in the other two portions of the exhibit. In the text on Page 55 it states "It shows the date of the certificate as August 28, 1952. Obviously, as I am sure Mr. Curran knows, it would be impossible to obtain a certificate on the same day as the application. There is no question that this portion of the exhibit does make things confusing, and I must apologize again for this error. Actually the three portions of Exhibit 4 are set forth to show three ways of handling the application shown as Exhibit 3.

JOHN-B. VAN HAELEN, *Paterson Chapter*

FIXED COSTS ARE PRODUCT COSTS TO NORMAL CAPACITY

Editor, N.A.C.A. Bulletin:

THE ARTICLE BY ANDREW S. SAPEGA in the September, 1951 issue of the *N.A.C.A. Bulletin* presented an interesting adverse criticism of the usual procedure followed in charging both variable and fixed overhead costs to work-in-process. Mr. Sapega objects to this procedure, which results in the inclusion of fixed costs in inventory valuations, and he recommends that only variable and semivariable components of overhead be charged to work-in-process while fixed costs be treated as period charges to profit and loss.

The strength of the arguments followed

in the article rests largely upon the assumption that there are only the two following ways of treating fixed overhead costs:

1. Charge all the actual fixed costs of each period to the product.
2. Charge no fixed costs to product but carry them as period charges.

There is, however, a third procedure which will meet Mr. Sapega's objections to the first method and at the same time will provide a more useful and realistic valuation of inventories than will result from the application of the second method. The recommended procedure is to charge product with fixed costs on the basis of a normal rate which will rest upon the relationship between fixed overhead and the normal level of capacity for each department as measured in machine hours, direct labor, or whatever basis is in use for the purpose. This rate should be retained regardless of expected volume.

The result will be that inventory will bear only the share of fixed costs resulting from capacity actually utilized. Underabsorbed fixed costs will then show up, not as a cost of producing, but rather as a cost of not producing, and will be treated as a period cost. Two useful objectives will be attained:

1. Inventory costs will be stabilized and free from inflation resulting from idle capacity costs which probably cannot be passed on to the customer.
2. Idle capacity costs will be high-lighted for management to see, instead of being hidden in inventories and cost of sales.

Mr. Sapega's argument that, since fixed costs are not correlated with volume of production, the cost of units produced should not bear any part of the fixed cost is not valid. Fixed costs arise mainly because of the existence of productive capacity. This capacity exists in order that units of product may be produced and, therefore, it is only logical to conclude that the economic cost of this capacity flows into the product to the extent that the capacity is utilized. An accounting procedure which does not recognize this fact is not presenting a true picture of operations.

E. H. VAN WINKLE, *Albany Chapter*

EMPLOYEE TRAINING—A CURRENT "MUST"

Editor, N.A.C.A. Bulletin:

THE FIELD OF ACCOUNTING has a gratifying improvement in prestige over the past years. The purpose of this letter is to stimulate thought towards maintaining and further improving this position under certain adverse conditions now confronting us. The improvement in accounting techniques and the increase in the accountant's participation in management decisions requires more versatile accounting employees. Many progressive concerns have recognized this factor and have sought to strengthen their organizations through employment of college graduates. These individuals are usually given a training course and are subsequently depended on to fill the gaps in the regular organization.

The present situation indicates that the availability of college graduates will be somewhat less. Through contacts with four universities and colleges in the South, it has become evident that the number of qualified graduates from university schools of business will show a marked decrease for the next several years. This has been substantiated by reports throughout the nation. There has been a sharp reduction in the number of students who are qualified for training under the G.I. "bill of rights." Also, the colleges are now beginning to feel the effects of the low birth rate during the depression years of the early 1930's. The decrease in enrollment has been further ag-

gravated by the drafting of young men into the armed services. At most of the schools it appears that, for the relatively near future, the number of qualified graduates in the field of accounting and, in fact, in the entire business field, may be reduced to approximately one-third the number of graduates during the 1947-1950 period.

This condition arises at a time when business is burdened with many new Government reports and is losing some of its better-qualified young men through the recall of reserves to active duty and through the draft. A very competitive situation in the hiring of college graduates will naturally result. It is, therefore, imperative that business organizations exhaust every means of encouraging present employees to improve themselves through planned and intensified programs. There is a certain amount of literature on employee training programs. This should be studied. However, most of the plans advanced have dealt with the larger organizations and are not economically feasible for the average small concern. The present situation is one in which business organizations, regardless of size, must seek the benefit of placing emphasis on training and improvement of present employees.

Small and medium-size companies, which account for such a large proportion of the total number of accounting personnel, have been rather laggard in the matter of recruiting of college students. Also, such companies are, of necessity, limited as to the number of employees who can be carried on the payrolls strictly for training purposes. Further, opportunities for rotation on jobs are more difficult to arrange than in the larger concerns.

However, there are employee training methods suitable to the small concern. One company, which has an average total employment of approximately 2,500 people and a normal accounting force of thirty to thirty-five employees, has obtained splendid results by upgrading present personnel. This has been accomplished by encouraging employees, particularly those who have not had the benefit of college training, to further improve themselves by attending night classes at the local colleges or enrolling in recognized correspondence courses. These college courses are taught by outstanding, practicing accountants who have both the theoretical and practical background necessary to qualify them as competent instructors. It is possible for the student to obtain, within a relatively few years, the equivalent of the best university training in accounting.

Another company has obtained good results through the enrollment of employees in correspondence courses. The procedure has been as follows:

> After approval of a request for enrollment, the company advances the entire price of the course and thus obtains it at the lowest cost. Payroll deductions are made over a period of twelve months to reimburse the company for this advance. However, upon presentation of evidence of successful completion of the course, the employee is reimbursed for the amount which has been previously deducted from his salary. Under this procedure, the employees have been diligent in pursuing their studies, and, in return, have found it helpful to have the lump sum of money refunded at one time.

It is realized that there are many other training plans in effect throughout the country. The important point is that the best constructive thinking should now be devoted to the subject. The interchange of new ideas and developments will assure us that accounting organizations will be prepared to meet the increased demands resulting from the rearmament program.

J. ELBERT JOHNSON, *Birmingham Chapter*

WHAT A FLOOD TAUGHT ABOUT RECORDS STORAGE

Editor, N.A.C.A. Bulletin:

THE DISASTROUS 1951 FLOOD through Kansas City's industrial sections pointed up some interesting and vital principles for filing and maintenance of records. Preliminary investigation reveals the following:

1. Filing systems, even in a small concern, should be somewhat decentralized for filing similar information. As an example of this need, one incident stands out. A small concern with $80,000 in accounts receivable moved its customer records to the balcony when the flood notice came, feeling that these records would be safe. Because of the height to which the water rose, these records were swept away without a trace. Luckily, a recent copy of the aging accounts receivable had been filed in another place. This list provided a basis for establishing new records at a time when collections were urgently needed. Although bound invoices from the date of the aging list had not been washed away, all records of cash receipts were gone. Deposit slips were obtained from the bank but they did not identify the individual checks. It was necessary to look at 400,000 microfilmed checks at the bank to identify the detail on the deposits.
2. Written accounting records should be in waterproof ink or pencil. Examination of some records revealed that waterproof ink remained legible, whereas other types of ink washed away. Pencil figures also retained their legibility. The use of red ink may result in transferring red marks to other pages and smearing them.
3. Machine records and typed material stood the test of water-soaking without much damage. Many records, such as accounts receivable ledger cards, were made usable again by sterilization and ironing. The binding of machine-produced records should be considered, since bound records were more frequently recovered. Time cards of employees were lost in many instances and it was necessary to make wage payments on the basis of employees' recollection of hours worked.
4. A factor to be considered in filing valuable papers is the susceptibility of the storage place to floods. Company vaults were considered fairly safe against fire, wind, or theft. However, flood waters did not respect the iron doors and many valuable papers were soaked and covered with silt. It should be pointed out that the water reached the height of about twenty feet, which meant that one-story buildings were entirely submerged in the flood areas. The water came so rapidly and forcefully that doors were broken and water surged through buildings, carrying away documents of all sorts. Many firms were successful in moving out some of the essential records before the water reached them. However, in this emergency (it happened more often than one would like to admit), it was discovered that less important papers were saved at the cost of losing more important ones. Evacuation, in any case, cannot be relied upon because trafficways are crowded at such a time with vehicles moving property.
5. Punched cards, if covered with water, absorbed the water and swelled. In some cases, the swelling broke the filing cabinets. However, if the cards were compressed in filing, it has been estimated that ninety per cent could be reproduced mechanically. Those cards which could not be reproduced mechanically could be read and reproduced by a key punch operator.
6. Microfilmed records should be stored out of possible flood areas. In microfilming, precautions should be taken to see that photographs are made of all documents to be preserved in the filming program. In one case it was discovered that papers had stuck together, resulting in photographing only the top sheet in several groups of papers.
7. Reports on insurance coverage prepared by accounting departments should point out whether such a program includes flood loss coverage. Many executives were not immediately aware that standard fire and extended policies did not cover flood losses.

Undoubtedly many other lessons will come from the flood situation, in the interest of accounting records which can be used not only in floods but in fires, hurricanes, bombings, etc.

PAUL SCHMIDT, *Kansas City Chapter*